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Part IV

Environmental Protection Agency

Interim Primary Drinking Water Regulations

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 141

[FRL 1535-7]

Interim Primary Drinking Water Regulations; Amendments

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: These regulations amend the National Interim Primary Drinking Water Regulations (NIPDWR), promulgated according to Section 1412 of the Safe Drinking Water Act, as amended, 42 U.S.C. 300f *et seq.* at 40 FR 59566 (December 24, 1975) and 41 FR 28402 (July 9, 1976). These amendments provide greater latitude to small public water systems for determination of compliance with the microbiological maximum contaminant levels (MCLs), specify alternate analytical techniques that have been approved by EPA for determining compliance with existing MCLs, provide an update of the approved analytical methods as prescribed in the NIPDWR, add a statement to the NIPDWR clarifying the apparent contradiction between setting an MCL for fluoride and the beneficial effects of fluoride, allow water samples taken by the State to be used to determine compliance, clarify that water systems shall submit to the State upon request any records required to be maintained by the NIPDWR, require water systems that have completed a public notification to submit to the State a representative copy of the public notification, change the time when results of monitoring are required to be submitted to the State from 40 days following a test to within 10 days following the month in which the sample results are received or within 10 days following the end of the monitoring period as determined by the State (whichever is shortest), require community water systems to monitor and report sodium levels in finished drinking water, and require community water systems to determine the presence of specific types of materials in distribution systems, and for one year to monitor and report corrosivity characteristics (pH, alkalinity, hardness, temperature, total dissolved solids, and the Langelier Index) of finished drinking water.

Modifications to the NIPDWR relating only to non-community water systems increase the latitude of the States by providing an additional 18 months for completion of nitrate monitoring, allow some non-community systems to exceed the 10 mg/l nitrate MCL up to 20 mg/l under certain controlled conditions, provide latitude in turbidity monitoring requirements and include modifications to the microbiological monitoring frequency and public notification measures.

In addition, increased latitude is provided to the States with respect to requirements concerning public notification through the media for community water systems.

EFFECTIVE DATE: These amendments to the regulations will be effective August 27, 1980 except that sodium monitoring and reporting, determination of the types of materials in distribution systems, and monitoring and reporting corrosivity characteristics will be effective 18 months following the date of promulgation. The sodium and corrosion requirements must be completed within 12 months following the effective date.

ADDRESS: Copies of the Statement of Basis and Purpose, which provides additional supporting documentation for the sodium and corrosivity monitoring, is available upon request from Craig D. Vogt, Chief, Science and Technology Branch, Criteria and Standards Division, Office of Drinking Water (WH-550), Room 1111, WSME, Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460, and is available for reading at EPA Regional Offices.

FOR FURTHER INFORMATION CONTACT: Craig D. Vogt, 202-472-5030.

SUPPLEMENTARY INFORMATION: On July 19, 1979, the EPA proposed amendments to the NIPDWR (44 FR 42247 *et seq.*) pursuant to Sections 1412, 1414, 1415, 1416, 1445 and 1450 of the Safe Drinking Water Act, as amended (42 U.S.C. 300f *et seq.*). As discussed in detail in the preamble to the proposed amendments, 44 FR 42247, these amendments to the NIPDWR are intended to update the regulations as a result of information gained subsequent to promulgation of NIPDWR on December 24, 1975, and July 9, 1976, pursuant to Sections 1412, 1414, 1415, 1416, 1445 and 1450 of the Safe Drinking Water Act as amended (42 U.S.C. 300f *et seq.*).

A total of 88 written comments on the proposed regulations were received. A public hearing was held in Washington, D.C., on August 29, 1979, and a total of seven witnesses testified at the public hearing. Comments and statements were received from water utilities, State and local officials, public interest groups, engineering consulting firms, industry associations, and individual citizens. Included were comments from the State Liaison Group and the National Drinking Water Advisory Council. EPA has thoroughly considered all comments and statements in formulating the final regulations. A detailed discussion of the comments and statements received and the Agency's response is presented in Appendix A.

Summary of Major Changes

As a result of the comments and new information provided by the commenters, the Agency made several changes to the proposed regulations which are indicated below.

The condition that no nitrite shall be present has been deleted from the provision that allows nitrate levels in non-community systems to exceed the MCL up to a level of 20 mg/l. In its place is guidance in the preamble to the States that levels of one mg/l nitrite should not be exceeded without careful consideration of all relevant factors on a case-by-case basis. In addition, appropriate local and State public health authorities must be notified annually of nitrite levels that exceed 10 mg/l. The proposal did not specify any frequency for notification and the notification was to physicians.

The proposed amendment that provided an additional year for non-community systems to complete nitrate monitoring has been extended to 18 months.

The proposed amendments to § 141.14 have been clarified such that the use of and/or within the regulation has been deleted. In addition, a provision has been added to § 141.14 (microbiological MCL) so that if an average MCL violation is caused by a single sample MCL violation the supplier will only be required to make one public notification for the single sample violation.

Provisions have been added to § 141.28 that allow analysis of pH and temperature by any person acceptable to the primacy agency.

The proposed amendment to § 141.31(a) has been changed to require the water supplier to report its analytical results to the primacy agency within the first ten days following the end of the required monitoring period as designated by the State, or within the first ten days following the month in which the sample results were received, whichever time is shortest.

The direct public notification requirement for sodium has been deleted. In addition, the amendment has been changed to require the water supplier to report sodium results within the first ten days of the month following the month in which the sample results were received or within the first 10 days following the end of the required monitoring period as designated by the State, whichever time is shortest. Also, a

provision has been added so that if more than one sample per compliance period is required, the supplier can accumulate the data before reporting the results.

The proposed amendment to 141.42 concerning corrosion control has been changed to require public water systems to identify the presence of specific materials within the distribution system and to monitor and report corrosivity characteristics including pH, alkalinity, hardness, temperature, total dissolved solids, and the Langelier Index. The monitoring and reporting requirement is limited to one year duration. These requirements are the initial steps in the proposed corrosion control program and specific monitoring requirements are set forth. For systems distributing corrosive waters, States are being encouraged to provide direction and technical assistance in implementing control measures to reduce the corrosivity. In addition, in a separate rule-making procedure, regulations will be proposed that set forth requirements for systems identified by the corrosivity monitoring to be distributing corrosive waters to increase monitoring for corrosion by-products, such as lead and cadmium, in representative locations.

The analytical methods approved for use in complying with the NIPDWR have been updated along with the approved alternate analytical methods.

Major issues, comments and revisions are discussed according to topic in the following.

Microbiological Contaminants

The wording of the proposal has been changed for purposes of clarification. The meaning and intent remains unchanged with the exception of adding a provision that if an average monthly MCL violation is caused by a single sample MCL violation, the supplier will only be required to make one public notification.

This amendment allows the primacy agency additional latitude in determining compliance by small public water systems with the monthly average MCL for coliforms in drinking water. The existing regulations governing microbiological contamination require that public water systems meet a monthly average and single sample MCL. This amendment does not make changes in the single sample MCL requirements.

The Safe Drinking Water Act authorizes EPA to establish minimum sampling requirements for public water systems taking into account several factors including the population at risk. Accordingly, the present regulations require systems to take a minimum number of microbiological samples each month based on the number of persons being served. Thus, for example, systems serving between 25 and 1,000 persons must take at least one sample per month; systems serving between 8,501 and 9,400 persons must take at least 10 samples per month; and systems serving 970,001 to 1,050,000 persons must take at least 300 samples per month.

Compliance with the microbiological standard is determined both on the number of coliform in a single sample and on the basis of a monthly average of the samples. Smaller systems taking fewer samples are more likely to violate the monthly average standard on the basis of only one sample showing coliform contamination (a "positive" sample) than are larger systems because of the mathematics of the averaging computation. For example, a system taking 10 samples per month with a single positive result of 16 coliforms would violate the monthly standard; whereas, a system taking 100 samples per month with a single positive result of 16 coliforms would not violate the monthly average standard; thus, this might lead to erroneous conclusions regarding the quality of the water of the systems. EPA recognizes that samples can be unknowingly contaiminated in the collection process, in transit or in the analytical process. Problems of this nature can severely impact very small systems and require unwarranted expense of public notification while not increasing public health protection. The problem of one such sample distorting the monthly average primarily impacts systems taking 10 or fewer samples per month (systems that serve less than 9,400 persons).

In order to resolve this problem, EPA is amending 40 CFR § 141.14(a)(1), (b)(1) and (b)(2), to permit State discretion in allowing certain public water systems serving fewer than 9,400 persons to exclude one (but only one) positive routine sample in the calculation to determine compliance with the monthly average if two conditions (safeguards) are satisfied. First, a sample must be collected on each of two consecutive days from the same sampling point beginning within 24 hours after it has been determined that a routine sample is positive as provided for in 40 CFR 141.21(d) (1) (2) (3). Both of these samples, called "check" samples, must be negative for the presence of coliform bacteria. Otherwise, the positive routine sample must be included in the calculation of the monthly average and, if this results in a violation of 40 CFR § 141.14, the public must be notified under 40 CFR § 141.32 or § 141.16.

Second, regardless of whether the positive routine sample is followed by two consecutive negative "check" samples, the positive routine sample must be reported to the State under 40 CFR § 141.31(a) and a record of the sample must be retained by the public water system for five years under 40 CFR § 141.33(a). This precaution should allow either the State or the public water system to detect a pattern of positive routine samples which might indicate a persistent problem with the microbiological quality of the drinking water.

This amendment will be permitted on a case-by-case basis as approved by the States in water systems where the State determines and indicates in writing that no unreasonable risk to health would exist as a result of this provision. The determination of no unreasonable risk to health should be based upon all relevant information including but not limited to the following: (1) the maintenance of an active disinfectant residual, (2) the potential for contamination as indicated by a sanitary survey, and (3) the history of water quality at the public water system (e.g., MCL or monitoring violations). EPA encourages water systems to maintain an active disinfectant residual as a protective measure, and this should be a major factor in a State's evaluation regarding the applicability to an individual water system. Further, States are encouraged to initiate systematic evaluations of all pertinent factors on a case-by-case basis prior to receipt of a petition from a public water system for application of this provision.

The existing regulations and the final amendments to the regulations provide three additional safeguards. First, water supply systems utilizing this amendment must take at least one additional routine sample in that period to replace the one that is discarded; second, the amendment can only be applied once during two consecutive compliance periods (either months or quarters as the case may be). In general, a compliance period is one month, but some public water supplies may be on a quarterly schedule. If a system has more than one positive routine sample in a compliance period, those additional positive routine samples must be included in the average whether or not they are followed by two negative check samples (Note: More than one positive routine sample per compliance period more likely indicates contamination of the drinking water than simple mishandling of the sample). Third, this amendment does not affect the "single sample" test set forth in the microbiological MCL. That is, regardless

of the monthly average of the microbiological standards, a system exceeds the standard if the individual or "single samples" taken in any month exceed the maximum levels established in 40 CFR 141.14(a) (2), (3); § 141.14(b)(1) (ii), (iii); and § 141.14(b)(2) (ii), (iii). It is emphasized that these provisions are not a substitute for proper sampling and analytical procedures including verification but merely provide latitude to the States to deal with small systems in the infrequent event of an improperly conducted sampling or test. This amendment does not allow public water supplies to reject samples known to be properly collected and analyzed. Investigations into the nature of the problem should be made and corrective measures should be taken, especially in repetitive cases where the amendment is exercised more than once annually.

The amendment also provides that periods shall be used instead of semicolons after 40 CFR 141.14(a)(1); § 141.14(b)(1)(i); and § 141.14(b)(2)(i) to make it clear that the microbiological limitations are composed of two separate MCLs—the "monthly average" standard and the "single sample" standard.

In addition, § 141.21(a) is being clarified to the effect that suppliers of water for community water systems and non-community water systems may engage the services of approved laboratories to monitor and analyze for coliform bacteria for the purpose of determining compliance with § 141.41. Contrary to EPA's intent, the existing language in § 141.21(a) has been interpreted by some to mean that the suppliers of water shall themselves monitor and analyze for coliform bacteria and thereby could not use other private and State laboratories for this purpose. That interpretation was inconsistent with § 141.28 which requires all analyses except turbidity and free chlorine residual to be performed in a laboratory approved by the State.

It is emphasized that these are interim regulations; EPA is conducting comprehensive evaluations of the microbiological standards in development of the Revised National Primary Drinking Water Regulations.

Review of the Major Issues—Microbiological Contaminants

In the proposal, EPA specifically solicited comments on the merits of the modification to the regulation and on the adequacy of the safeguards for dealing with the problem of possible spurious samples leading to unnecessary public notification.

Ten comments were received that expressed some dissatisfaction with the current coliform standard, particularly the average monthly MCL. The main objections were that the response time to the average MCL was too long to be meaningful and that relative numbers of coliforms do not indicate relative health risks as is implied by the single sample MCL of four or greater and by the average MCL.

These commenters' concerns were directed towards the coliform MCL rather than the specific requirements in the proposal and were therefore not addressed herein. EPA is currently conducting a comprehensive evaluation of the regulations on microbiological contaminants and each of these comments will be carefully considered in the development of the Revised Regulations.

Many commenters misunderstood the provisions of the amendment in that they thought that the proposed amendment required that a system maintain an active disinfectant residual before it could be eligible for excluding a sample from the average MCL calculation. Eight of these commenters felt that samples with no chlorine residual could be more easily contaminated (i.e. through improper sampling or testing procedure rather than in the actual quality of the water) and be misrepresentative than samples with a residual; they were opposed to systems being required to maintain a disinfectant residual in order to be eligible for the conditions of the amendment. Several commenters felt that only systems having an active disinfectant residual should be eligible for excluding a sample.

For purposes of clarification the wording of the amendment has been changed. As discussed previously, this amendment will be permitted on a case-by-case basis as approved by the States in water systems where the State determines and indicates in writing that no unreasonable risk to health would exist as a result of this provision. This determination should be based upon all relevant information including but not limited to the following: (1) the maintenance of an active disinfectant residual, (2) the potential for contamination as indicated by a sanitary survey, and (3) the history of water quality at the public water system (e.g. MCL or monitoring violations).

Seven commenters stated that the amendment should apply to all system sizes, most arguing that contamination of one sample in a large system could lead to non-compliance with the monthly average MCL and unjustified public notification.

Smaller systems, because of their lower required monitoring frequency, are more likely to violate the monthly average MCL because of contamination of one sample than are larger systems. Large systems taking a large number of samples are less likely to violate the monthly average MCL because of a spurious sample since it would be included with a large number of negative samples (expected in meeting the MCL), and thus probably not lead to an average MCL greater than one. EPA has studies the distribution of single sample and average MCL coliform violations as a function of supply system size. A relatively small number of systems serving over 9,400 would potentially be affected if the amendment were made applicable to them. Thus, no changes were made and the provisions are only to apply to systems serving 9,400 and less.

Other comments concerning the microbiological MCL are addressed in Appendix A.

Sampling and Analytical Requirements

The purpose of this amendment is to clarify that monitoring samples that are taken by the State may be used to determine compliance with the NIPDWR. The present regulations state that compliance with any MCL is to be determined pursuant to the applicable monitoring and analysis requirements set forth in Subpart C of the NIPDWR. However, the monitoring and analysis requirements are directly applicable to the suppliers of water, and it is unclear as to whether the results of such compliance sampling performed by the supplier were meant to be the only samples that could be used to determine compliance with the regulations.

The language of this amendment specifies that the State in a primacy State or the EPA in a non-primacy State under Subpart C of the NIPDWR has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by their sanctioned representatives and agencies.

There were no major issues concerning this amendment and thus, no changes were made to the proposed amendments. Specific comments are addressed in Appendix A.

Alternate Analytical Methods

The NIPDWR specify, in most cases, a single analytical procedure for determining the concentration of each contaminant. However, § 141.27 states that alternate analytical techniques may be used with the written permission of the primacy agency, and with the concurrence of the Administrator of the

EPA. Proposals for an alternate method for nationwide use are initially evaluated by the EPA's Environmental Monitoring and Support Laboratory (EMSL) with final review by the EPA's Office of Drinking Water. In order for an alternate method to be approved, it must be deemed substantially equivalent to the prescribed test in precision and accuracy. In addition, the use of an alternate analytical method for determination of compliance with any MCL does not change the frequency of monitoring required.

A number of alternate analytical techniques have been approved by EPA at the request of some States. These techniques have been determined to be equivalent methods and are now acceptable for determining compliance with the NIPDWR. All analytical procedures will be thoroughly reviewed as part of the development of Revised Regulations, and precision and accuracy requirements, as well as the type and amount of supporting documentation to support inclusion as an acceptable method, will be more carefully defined.

EPA is postponing final approval at this time to a proposed alternate turbidity standard, "Nephelometric Method with Styrene Divinyl Benzene Polymer Standard," proposed at § 141.22(a). EPA had made final approval of this standard conditional upon receipt from the manufacturer, Amco Standards International, of information related to the preparation and use of the standard. Amco has not submitted the necessary information and thus, the reference and footnote 4 to this reference has been deleted from the final regulations. EPA is requesting submission of any relevant information on the issue of final approval or disapproval of this standard on or before October 27, 1980.

No major issues were raised by the commenters, and thus, with the exception of deleting the reference to the "Nephelometric Method with Styrene Divinyl Benzene Standard," there were no changes to the proposed amendment. However, commenters suggested updating the list of approved analytical techniques as presently specified in the NIPDWR, and adding them to their appropriate sections. The updated methods have been included.

The atomic absorption furnace techniques for most metals requiring monitoring by the NIPDWR have been published in the 1979 EPA "Methods for Chemical Analysis of Water and Wastes," and are available from ORD Publications, CERI, U.S. EPA, Cincinnati, Ohio 45268.

The alternate analytical methods, now approved, and several referenced ASTM methods, essentially identical to the originally specified procedures, have been updated and added to their appropriate parts of §§ 141.22, 141.23, 141.24 and 141.41. In the proposal these analytical techniques were listed under § 141.27(b) which has now been deleted.

In addition, reference has been added to several sections of "Microbiological Methods for Monitoring the Environment, Water and Wastes," U.S. EPA, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268—EPA–600/8–78–017, December 1978. Available from ORD Publications, CERI, U.S. EPA, Cincinnati, Ohio 45268.

Specific comments are addressed in Appendix A.

Reporting of Compliance Data

The NIPDWR presently requires that results of monitoring be reported to the State within 40 days following a test. Under these provisions, it can take almost two months to assure compliance and, in some cases, this can defeat the possibility of prompt corrective action. Thus, the intent of the proposed amendment was to shorten the time period between sampling and reporting. The provisions of the proposal would have required that the supplier of water report to the State its analytical results within 10 days following receipt of such results; analyses performed more frequently than once per month, such as turbidity and coliforms, could be reported at one time by the tenth day of the month following the month in which the samples were analyzed. However, the preamble of the proposal described the proposed amendment as requiring the supplier to report all results to the State no later than the tenth day of the month following the month in which sample results were received.

Commenters were most concerned with the possibility of having to report to the State within 10 days of receipt of results. Based on these comments, the amendment has been changed to require the supplier of water to report to the primacy agency its analytical results within the first ten days following the end of the required monitoring period as designated by the State, or within the first ten days following the month in which the sample results were received, whichever of these is shortest.

This amendment will encourage earlier reporting of analytical results to the primacy agency without inconvenience to the supplier and minimize clerical work by facilitating the reporting of all parameters at the same time.

Some States currently require coliform and turbidity results to be submitted at a mid-monthly rather than at an end of month frequency. The wording of the amendment maintains uniform reporting requirements for all States. The amendment also ensures that non-community systems which might only be required to conduct quarterly coliform monitoring, will report their results within the same time constraints as community systems.

In addition, a statement has been added to the NIPDWR which clarifies that the water supplier must submit upon request to the State copies of any records required to be maintained by the NIPDWR.

Review of Major Issues—Reporting of Compliance Data

Six of the twelve commenters felt that a required reporting time of ten days was unnecessary. Most indicated that the problems of immediate health risk are considered in the NIPDWR which requires that violations of an MCL be reported to the primacy agency within 48 hours. Some of these commenters alleged that contaminants to which the ten days reporting requirement applied posed potential chronic rather than acute health risks; thus, they considered it illogical to require such a short response time for State notification of results. Several commenters indicated that allowing water suppliers more time to report results would permit them to equalize their work load.

The purpose of having a shorter required reportage time is to allow the primacy agency to determine more quickly those systems which do not report their MCL violations within 48 hours, and to begin corrective action as soon as possible. This particularly pertains to coliforms which potentially indicate immediate health risks. Contaminants which only pose chronic health risks should also be reported within the same time frame since no inconvenience will be imposed upon the supplier. Requiring shorter reporting times for coliforms and turbidity would be impractical because of their high monitoring frequency. EPA considers it illogical a require to shorter reportage time for the parameters other than coliforms or turbidity since their health risks tend not to be so imminent. Therefore, the amendment has been changed to provide for simultaneous reporting of all parameters. The amendment should reduce the reportage time for most parameters by about one half without further inconvenience to the supplier.

Public Notification

Under section 1414(c) of the SDWA and 40 CFR 141.32 of the NIPDWR, a community water system is required to

notify the public immediately through notices in the newspaper, radio and television media of any failure to comply with an applicable MCL in addition to notifying its customers through water bills or by direct mail within three months of such failure.

An amendment to § 141.32(b) has been added to provide greater latitude to the States to waive the media notification requirements, applicable to a community water system under circumstances where such notification would not be meaningful; that is, where a violation has been corrected promptly after discovery, the cause of the violation has been effectively eliminated and the violation no longer poses a risk to public health. Consumer notice as required by § 141.32(a) would remain unchanged by this amendment.

This limited modification of the media notification requirements is authorized by the SDWA and is consistent with its legislative history. Section 1414(c) gives the Administrator the discretion to establish by regulation the form, manner and frequency for giving public notice. It was contemplated that such regulations would be reasonably designed to implement the purposes of the SDWA, while not unduly burdening public water systems with unnecessary and counter-productive requirements. Thus, in House Report No. 93–1185 accompanying the SDWA, Congress explained that:

> The purpose of this notice requirement is to educate the public as to the extent to which public water systems serving them are performing inadequately in light of the objectives and requirements of this bill. Such public education is deemed essential by the Committee in order to develop public awareness of the problems facing public water systems, to encourage a willingness to support greater expenditures at all levels of government to assist in solving these problems, and to advise the public of potential or actual health hazards.

This public education function is well served by consumer notification of any failure to comply with a MCL, as well as media notification of continuous violations, repeat violations, or where the cause of the violation has not been duly corrected. Violations of MCLs, other than coliforms, the cause of which has been promptly corrected, would probably not have posed serious health problems. Moreover, since the State is required to make an affirmative determination that a waiver of media notification is appropriate for any given circumstance, such waivers can certainly be denied where media notification would be meaningful in terms of advising the public of any serious problem. No waiver would be appropriate, for example, where a system had a history of violations or where only interim measures had been taken to correct the problem. The good faith efforts of the system to comply and the nature and degree of the violation should also be taken into account.

The House Report accompanying the passage of the SDWA also supports an interpretation that Congress intended that the three-month consumer notice would be sufficient under most situations to notify the public of corrected violations. Thus, Congress stated: "The Administrator's regulations should also require that the three-month notice include all violations not previously reported, even though they have been corrected at the time of notification" (emphasis added, p. 24). The three-month notice requirement refers to the consumer notice required by § 141.32(a). This language is interpreted as providing greater latitude to the Administrator to allow for waiver of the § 141.32(b) requirements of media notification for corrected violations under appropriate circumstances, provided that the purposes of the SDWA are not violated or circumvented. This is consistent with Congress concern that public notification not unduly alarm the public.

This amendment attempts to be responsive to comments received from States and public water systems which expressed concern regarding the necessity and expense of media notification. Such expense is surely warranted where the public is informed of recurring violations or violations of a continuous nature. However, where violations have been corrected promptly after discovery and the cause of the violation has been effectively eliminated, such expense becomes less justified. EPA does not allow for waiver of the media notification requirements for every case where a violation has been corrected prior to the time that the notice would be issued. The public education function of the media notification requirements will still be served under most circumstances.

In addition, § 141.31(d) has been added which requires water systems to submit to the State, within ten days of the completion of issuance of public notification, a representative copy of each type of notice distributed, published, posted, and/or made available to the persons served by the system and/or to the media.

Monitoring for Sodium in Drinking Water

This amendment requires (1) monitoring of sodium levels in drinking water by community water supply systems at least annually for surface water systems and at least every three years for systems using groundwater sources. In addition, (2) suppliers must report the levels to EPA and/or the State within the first ten days of the month following the month in which the sample results were received and (3) suppliers must also notify local and State public health authorities. Suppliers are not required to notify local authorities where the State provides such notices in lieu of the supplier. The effective date of the regulation is 18 months from promulgation which should provide sufficient time for States to adopt the regulations. The first round of sampling and reporting must be completed by all systems within 12 months following the effective date.

Two provisions which were proposed have been changed. These changes include revisions in the time for reporting and deleting the direct public notification requirement.

Sodium ions naturally occur in water from leaching of surface and undergound salt deposits, intrusion of sea water into fresh aquifers, and from salt spray along the seacoast. Human activities such as deicing, municipal use (e.g. urine and washing products), and types of water treatment (e.g. softening, pH adjustment) also contribute to increased levels of sodium in water. However, drinking water is usually a very minor source of total dietary sodium except for persons on sodium-restricted diets.

Evidence indicates that excessive sodium intake contributes to an age related increase in blood pressure that culminates in hypertension in genetically susceptible people (NAS, Drinking Water and Health, 1977). The NAS has estimated that about 15 to 20% of the population are at risk of developing hypertension.

Intake from food is generally the major source of sodium. However, in many instances, where high sodium concentrations in the drinking water occur, the contribution of sodium by water may constitute a significant fraction of the total sodium intake. About 3% of the population is on sodium-restricted diets calling for sodium intake of less than 2,000, 1,000 or 500 mg/day. Where water supplies contain more than 20 mg/l, dietary sodium restriction to less than 500 mg/day is difficult to achieve and maintain (NAS, 1977). Therefore, knowledge of the sodium ion content of the water supply and maintenance of it at the lowest practicable concentration is critical in arranging diets for persons who require a low sodium diet. EPA suggests that sodium levels of 20 mg/l or less in drinking water be considered as optimal.

The current NIPDWR (40 FR 59566) do not contain a monitoring requirement for sodium. The NAS included sodium in its study of the health effects of inorganic chemicals and recommended that sodium concentrations in water should be maintained at the minimum possible, and that provisions should be made for notifying persons on low sodium diets. In response, EPA is establishing monitoring and reporting requirements for sodium. In addition, EPA recommends that systems having sodium levels above 20 mg/l should examine their present treatment systems in order to minimize sodium levels; in some cases, systems are adding sodium containing compounds to the drinking water for such corrosion control or for other purposes but frequently alternate corrosion control methods are available and are similarly cost-effective.

Sodium monitoring was one of the issues of a petition for review of the NIPDWR. *EDF v. Costle,* 578 F. 2d 337, 347 (D.C. Cir. 1978). EDF urged that monitoring for sodium should be mandatory rather than voluntary. The Court indicated that the study carried out by NAS may aid EPA in re-evaluating its approach to sodium. The 1977 Amendments to section 1414(c) and 1445(a) of the SDWA also clarified EPA's authority to require monitoring, reporting and public notification of levels of any contaminant for which an MCL has not been established.

This amendment establishes special monitoring, reporting and notification requirements for sodium, an otherwise unregulated contaminant, as now authorized by the SDWA. Although it appears in 40 CFR Part 141, it is not, strictly speaking, a NIPDWR. Therefore, it has been included in Subpart E of Part 141 which was established when EPA promulgated special monitoring requirements for organic chemicals in drinking water in 1975 (40 FR 59588, December 24, 1975). States will not be required to adopt these special requirements for sodium as a condition for maintaining or obtaining primary enforcement responsibility under section 1413 of the SDWA. These requirements will be enforceable by EPA under the separate enforcement authorities provided under section 1414(c) of the SDWA. Nevertheless, States are urged to adopt these requirements as State drinking water regulations to minimize the federal enforcement role in primacy States. The sodium requirements will be effective 18 months following promulgation to afford States ample time to adopt them. Systems must complete the first round of sampling within 12 months of the effective date.

The purpose of a sodium monitoring program is to assure that affected persons are informed, so they can make necessary adjustments in water usage. Suppliers of the water will be required to report to EPA and/or the State the results of such sodium monitoring within the first 10 days of the month following the month in which the sample results were received. Suppliers of water are required to notify appropriate local and State public health officials of the sodium levels by written notice within three months of receipt of results. However, where the State has adopted this regulation and provides the notice to the local and State public health officials, the supplier may be relieved of this particular notice requirement. A copy of each notice sent in compliance with these requirements must be sent to EPA (or the State) within 10 days of its issuance.

Review of the Major Issues—Monitoring for Sodium

In the proposal, EPA solicited comments on the merits of the proposed notification requirements, the feasibility of establishing an appropriate MCL for sodium, factors for determining the appropriate monitoring frequency, and the proposed effective date for implementing the regulation.

Of the 55 comments received on the proposed monitoring requirements for sodium, 22 expressed general support but indicated specific reservations, 25 presented no value judgment but made specific comments, and 8 were opposed.

The proposed amendment would have required suppliers to directly notify the public of the sodium concentrations in their water. EPA suggested that suppliers could implement such notification by including sodium concentrations on their water bills or any other convenient means.

Twenty-nine out of the fifty-five comments received on the proposed sodium amendment opposed direct consumer notification. Most of these commenters favored public notification via health agencies and physicians, permitting the public to be informed through these resources upon their own request. Eight commenters thought that such notification should only be required if the sodium levels were "high" (e.g., 20 to 270 mg/l). The main objection to direct consumer notification was that since only a small fraction of the population is affected by sodium, an unnecessary burden would be placed on the supplier. Many thought that the public would be confused or falsely alarmed over reported sodium concentrations on water bills; several indicated that space for proper clarification on the water bill would be lacking and that the printing and distribution of additional material by the suppliers would be costly. A few commenters expressed concern over the logistic problems of consumer notification, noting that in some locations such as apartment complexes, residents are not billed independently. Some commenters considered it illogical to notify the public of sodium content in water when this was not being done for foods which are the more significant source.

Nine commenters favored direct consumer notification (as proposed) provided that the requirement only pertain to supplies having "high" sodium concentrations (e.g., 20 to 250 mg/l). Only a few commenters indicated support for direct consumer notification for all systems.

EPA has deleted the direct public notification requirement. The final amendment requires suppliers of water to report their sodium concentrations to EPA and/or the State and to designated local and State public health officials. If the State notifies the local and State public health officials, public water systems are relieved of this requirement. The public and physicians can be informed of sodium levels in their water by contacting their local public health office, the State, or water system. Of course, systems can opt to regularly report sodium concentrations to the public along with other primary or secondary regulation parameters, as some already do.

Suppliers with sodium concentrations above 20 mg/l should prevent further increase in their levels during the treatment process. At this time, EPA does not expect systems to apply treatment technology to reduce their sodium levels below that of their raw water source because of the high cost of the only available treatment technology.

Nine of the seventeen commenters who addressed the feasibility of establishing an MCL were opposed to such a requirement, mainly because of the lack of available cost-effective technology for reducing sodium levels. Some commenters felt that not enough evidence is available to implicate sodium as a health risk. Several commenters thought that an MCL would be inappropriate since the percentage intake of sodium in water relative to food tends to be very small; an MCL would thus only affect a very small percentage of people on restricted sodium diets, who in turn could buy bottled water for an overall more cost-effective solution.

Eight commenters suggested that if an MCL were established it should be higher than EPA's stated goal of 20 mg/l (ranging from 100 to 250 mg/l). Otherwise, too many supplies would not be able to meet the level without incuring very high treatment costs. The commenter also stated that a low MCL would also conflict with EPA's corrosion control objectives since sodium compounds are sometimes the most cost-effective treatment.

EPA recognizes that the available technology for sodium removal is expensive and would not necessarily be cost-effective to meet national regulations at this time. At this time, insufficient data is available on the significance of risk from sodium in drinking water and thus setting an MCL is now not appropriate. However, the Agency will reconsider if additional data becomes available. The health risks related to sodium intake are further discussed in responses to specific comments in Appendix A and in the Statement of Basis and Purpose.

In the preamble to the proposed regulations, EPA stated that 20 mg/l of sodium was a goal. Many commenters felt that this was an unrealistic statement considering the lack of available cost-effective treatment technologies; EPA recognizes the difficulty that many systems would have in achieving a level of 20 mg/l and the statement has been revised to state that 20 mg/l or less of sodium should be considered as an optimum for drinking water. Suppliers having raw waters above 20 mg/l are encouraged to minimize the addition of sodium compounds in their treatment process. Water systems should be sensitive to the levels of sodium in their drinking water sources and evaluate treatments that avoid the addition of sodium, such as by using lime when possible rather than soda ash to adjust the pH for corrosion control.

Most of the commenters raised no objections to the proposed monitoring frequencies. Of the 8 comments responding to this issue, 6 thought higher monitoring frequency should be required due to the variability of sodium concentrations, 3 suggesting that the State or primacy agency determine such frequencies on a case-by-case basis. Other comments suggested basing the monitoring frequency on population served, and applying the same monitoring frequency to surface as well as groundwater.

The amendment sets a specified minimum frequency for surface and groundwater systems and includes provisions which would encourage States to implement more frequent monitoring where needed. Since groundwaters tend to have more stable sodium concentrations than surface waters, they are not required to be monitored as frequently. In regard to monitoring on the basis of population served, EPA believes this would add unnecessary costs; monitoring frequency should be based on variability of concentration rather than population. Coliform monitoring requirements are based on population because they are indicators of potential acute health risk, and because their presence is susceptible to high variation in case of failure in the water treatment process.

Three commenters objected to implementing the regulation 18 months following promulgation. Two preferred that additional time be provided but one suggested instituting the effective date two months following promulgation since no treatment modifications would be needed to meet an MCL.

EPA is strongly urging the States to adopt these requirements to minimize the federal role. EPA believes that 18 months will provide sufficient time for States to formally adopt these requirements and systems can complete the first round of sampling and reporting within an additional 12 months.

Other comments are addressed in Appendix A and the costs and economic impact associated with the sodium requirements are discussed below under the subheading, "Economic and Energy Assessment."

Corrosion Control

The final regulations on corrosion control have been changed and include specific requirements for public water systems to (1) identify the presence of specific types of materials used in distribution systems and to (2) monitor several corrosivity-related characteristics for a duration of one year. The proposal set forth a corrosion control program that would have initially required monitoring to assess the corrosivity of the water, followed by implementation of corrosion control measures. Commenters stated that although control of corrosion was an important concern the proposed corrosion control program lacked specific requirements. As discussed in the preamble to the proposed regulations, the problems of corrosive waters are unique to the circumstances in each public water system in that the quality of water varies, existing treatment systems can impact the corrosive nature of the water, and the occurrence and distribution of materials of construction of the distribution system are specific to each system. Thus, regulations were proposed to control corrosion and corrosion by-products by implementation of corrosion control programs under the direction of the State; the program was to include monitoring for corrosivity characteristics, and implementation of control measures where needed. It was anticipated that the EPA regulations would provide direction but the actual corrosion control programs at each public water system could best be determined at the State and local level.

Sixty-eight comments were received concerning the proposed corrosion control program. The consensus was that the proposal lacked specific criteria and guidelines for methods, procedures, and implementation of the corrosion control program. Other commenters opposed the establishment of MCLs for corrosion that would be based upon one or more of the corrosivity indices. Some of these commenters, however, suggested that the indices may be used to identify corrosive waters. Other commenters suggested that regulations for control of corrosion should be based upon specific MCLs for contaminants resulting from corrosion. Similarly, several commenters felt that since MCLs are already established for the common corrosion by-products of lead and cadmium, corrosion control should be implemented through monitoring and meeting the MCL requirements.

The commenters agreed with the Agency that corrosion is a complex phenomenon and the occurrence of corrosion-related contaminants is not uniform in water supply systems. The proposal took into account that in many instances corrosion-related problems may be unique to each water supply system. Thus, the Agency was not specific in order to provide as much latitude as possible to the States and suppliers to detect, evaluate and solve corrosion related problems in a feasible and economical manner, and on a case-by-case basis if necessary.

The Agency believes that corrosion is a very significant concern not only affecting the aesthetic quality of the water but having a serious economic impact and posing health implications. Corrosion by-products containing materials such as lead and cadmium have been associated with serious risks to the health of consumers of drinking water. In addition, by-products of corrosion commonly include such compounds as zinc, iron, and copper for which secondary MCLs have been set in the NSDWR; occurrence of these compounds, as a result of corrosion, should be considered indicators of potential health risk because, as stated in the NSDWR, high levels of

contaminants in the NSDWR can pose a health risk; also, if corrosive waters are leaching these compounds from piping materials, it is very likely that other compounds of health concern are also leaching from the pipes. Further, a number of epidemiological studies indicate that there may be an increased incidence of cardiovascular disease associated with the consumption of soft waters, which tend to be corrosive (however, this subject is still under investigation).

Results of two independent studies estimate that approximately 16% of the public water systems in the United States distribute waters that are highly aggressive ($LI < -2.0$), while an additional 52% distribute moderately aggressive waters ($-2.0 < LI < 0.0$). It is also known that only a limited number of these systems have instituted corrosion control measures.

The Agency carefully evaluated the merits of the issues raised by the commenters. EPA maintains that corrosion control is a serious concern and implementation of a corrosion control program would best be accomplished on a case-by-case basis. In addition, it is apparent that specific directions are desirable to initially identify distribution system materials subject to attack by corrosive waters and to identify corrosive waters followed by careful on-site evaluations of control options.

Originally, the Agency considered the use of the Aggressive Index (AI), the Ryznar Index (RI) and the Langelier Index (LI) to determine the corrosive tendencies of the water. These indices are not a direct measure of the corrosivity of the water but rather are indicators of the calcium carbonate stability which may be used to predict whether or not a calcium carbonate ($CaCO_3$) layer may be deposited and maintained on pipe surfaces to protect against corrosion. The Agency recognizes that these indices may not be ideal as a determinant for corrosive characteristics of drinking water in all instances.

The Langelier Index defines the tendency of the water to form or dissolve calcium carbonate scales by comparing the saturation pH of the calcium carbonate (pHs) with the measured pH of the water, $LI = pH - pHs$. While negative values resulting from the difference between pH and pHs express the tendency of the water to be corrosive, positive values express a supersaturated condition indicating the formation of a protective scale of calcium carbonate on interior surfaces of the distribution system. At equilibrium, the LI has a value of 0.

The RI, which is a variation of the LI, is also calculated from the pHs of calcium carbonate saturation by the formula, $RI = 2\ pHs - pH$, and provides an indication of the relative scale forming or aggressive tendencies of the water. Calcium carbonate scale deposition increases proportionally as the index drops below 6, and corrosion increases as it rises above 6, with extremely aggressive conditions for values of 10 and above.

In calculating the RI and LI, the pH, alkalinity, hardness, temperature and the TDS content of the water are taken into consideration. The AI, established as a criterion for determining the quality of the water that can be transported through asbestos cement pipe without adverse effects, is calculated from the pH, calcium hardness in mg/l as $CaCO_3$ (h) and the total alkalinity in mg/l as $CaCO_3$ (A) of the water by the formula $AI = pH + \log (AH)$. The AI does not consider the effects of temperature and TDS on the corrosive tendency of the water. An AI of 12 or above indicates non-aggressive water, while values of 10–11.9 is a possible indication of moderately aggressive conditions. AI values below 10 indicate extremely aggressive conditions.

The formation of a protective $CaCO_3$ layer is dependent on the pH, alkalinity, hardness, total dissolved solids (TDS) and the temperature of the water, each of which may independently affect the corrosive tendencies of the water. For instance, soft low alkalinity waters having either low or excessively high pH are corrosive even though the calculated LI may indicate non-corrosive tendency. In these instances, due to the insufficient amount of calcium ions and alkalinity, no protective $CaCO_3$ film can form. Since the materials used in distribution systems to convey the water are often amphoteric in nature, with the exception of asbestos cement or plastic pipes, corrosion will occur when either excessively low or high pH waters are conveyed.

Waters having high pH values and sufficient hardness and alkalinity may also exhibit corrosive tendencies even though the LI indicates non-corrosive conditions. At high pH levels formation of various calcium and magnesium complexes may result in the removal of calcium and alkalinity from active concentrations of their normal form thus preventing the formation and maintenance of a protective $CaCO_3$ layer. Since analytical procedures fail to distinguish between these forms, deposition of a $CaCO_3$ film may not be predicted reliably using any of the calcium carbonate saturation indices.

The corrosive tendencies of the water to particular metals such as the ones used in distribution systems are also significantly influenced by the amount of TDS. Waters containing TDS exceeding 150 mg/l may exhibit corrosive tendencies. The presence of various ions such as sulfates and chlorides in the water may interfere with the formation and maintenance of a uniform protective $CaCO_3$ layer on metal surfaces. In addition, the presence of these ions will accelerate the corrosion process.

Because of the influence of the various parameters involved, it is generally agreed that the LI may only be applicable to determine the corrosive tendencies of the water within a pH range of 6.5 to 9.5 provided that a sufficient amount of calcium ions and alkalinity over 40 mg/l are present in the water.

In response to comments and in continuing to emphasize that corrosion is a serious concern, a revised strategy has been developed regarding the control of corrosion-related contaminants in public water supply systems; the Agency has decided to confront the problem of corrosion by four steps as follows:

(1) Require systems to determine the presence of specific materials of construction of the distribution system;

(2) Require monitoring for parameters influencing the corrosivity characteristics of water by community water systems;

(3) Encourage through State direction and assistance the implementation of corrosion control measures at systems distributing corrosive waters;

(4) Require systems with corrosive waters and distribution materials vulnerable to contamination due to corrosion to increase monitoring for corrosion by-products, such as lead, cadmium, zinc, copper and iron.

In order to accomplish these goals, the Agency is taking the following steps:

(1) Requirements are being established by these regulations to determine the presence of specific materials in distribution systems and to monitor for characteristics of corrosivity; only one year of monitoring and reporting is required in order to assess the corrosivity characteristics of the water;

(2) EPA will also provide guidance to States to assist in accessing the problems of corrosivity and the most cost-effective treatment methods; and

(3) A separate rule-making will propose regulations for increased monitoring for other corrosion related contaminants.

In recognition of the importance of the role of various parameters affecting the corrosivity of the water, the final regulations include specific requirements for monitoring and reporting the pH, alkalinity, hardness, and TDS of the water in addition to the LI. A number of States have already established requirements for reporting and monitoring of some of these parameters plus sulfate and chloride levels which are included in the National Secondary Drinking Water Regulations; States are encouraged to require monitoring for sulfate and chloride levels as indicators of corrosivity characteristics. The Agency feels that knowledge of these parameters in addition to the LI will provide a better basis for evaluating the corrosive tendencies of waters. In certain instances, where asbestos cement pipe is in contact with the water, the AI may be reported instead of the LI.

These regulations finalize the initial step in the proposed corrosion control program; systems will identify the types of materials used in their distribution systems and will determine if the waters being distributed have corrosive characteristics. For systems distributing corrosive waters, it is expected that corrosion control measures would be implemented under the direction of the State.

Inclusion of the requirement that the community water supply system identify and report to the State the materials of construction in the distribution system including service lines and home plumbing is to assure that the potential for the occurrence of corrosion by-products is known. Systems must complete their assessments and report to the State within 12 months of the effective date of the regulation.

Occurrence of corrosion related contaminants, such as lead, cadmium, copper, iron, zinc and asbestos, is a function of both water quality and distribution system factors. Thus, in addition to determining the corrosive nature of the water, the water supplier should determine and report whether the following materials of construction are present in the distribution system:

1. Lead used in piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing.
2. Copper used in piping and alloys, service lines, and home plumbing.
3. Galvanized piping, service lines, and home plumbing.
4. Ferrous piping materials such as cast iron and steel.
5. Asbestos cement pipe.

In addition, other distribution system materials have been shown to contribute contaminants to the drinking water; tetrachloroethylene has been measured in some waters distributed through vinyl lined asbestos cement pipe, and polynuclear aromatic hydrocarbons have been found in some waters distributed through piping and tank materials coated with coal tar. Thus, States are provided the discretion to require systems to identify and report the use of other types of materials, such as vinyl lined asbestos cement pipe or coal tar lined materials.

A number of approaches are available to determine the presence of materials in distribution systems which have the potential for contaminating drinking water supplies. These include, among others, general knowledge of the system along with consulting records and knowledge of plumbing codes and practices, surveys at the consumers' homes, questionnaires, and possibly meter readers gathering information.

While the regulations only require community water systems to determine the presence of the above materials, it is recommended that the systems, in considering the potential for corrosion problems, will also determine the extent of usage of the materials in the distribution system; this would allow for evaluation of the significance of the potential for release of corrosion by-products into the drinking water. Availability of this information regarding water quality and the presence of specific materials of construction will enable the primary enforcement agency to determine which water supply system should initiate corrosion control measures.

In addition, regulations will be proposed in a separate rule-making that will require increased monitoring for corrosion by-products, such as lead and cadmium, for systems distributing potentially corrosive waters with materials in the distribution system that could contribute corrosion by-products to the drinking water. In those cases where the monitoring showed MCLs to be violated, it is expected that corrosion control measures would be implemented.

Summary of the Corrosion Characteristics Regulations

The regulations being promulgated are:

(1) All community water supply systems are to collect and analyze samples to determine the corrosive characteristics of the water by monitoring and reporting the alkalinity, pH, hardness, temperature, TDS of the water; also, the Langelier Index must be reported which can be calculated from the above parameters. The regulations provide that certain systems may report the Agressive Index (AI) in lieu of the Langelier Index since the AI may be more appropriate for certain systems that use asbestos-cement pipe; the State is provided the discretion to make this determination.

Monitoring for the above parameters to define the corrosivity characteristics of the water need not be repeated after the initial round(s) of sampling; however, States are provided the discretion to require additional monitoring. The effective date of the regulations is 18 months following the promulgation date. The monitoring and reporting requirements must be completed within 12 months following the effective date of the regulation. This will provide States sufficient time to adopt these regulations and assure that systems have conducted the monitoring. Systems are encouraged to conduct the monitoring as early as feasible.

(2) Samples shall be taken at each plant at a representative entry point into the distribution system. Sampling is specified at a representative entry point of the distribution system because substances within the distribution system could influence the corrosive characteristics of the water. For instance, water passing through asbestos-cement pipe tends to become less aggressive because of an increase in hardness and pH resulting from the leaching of calcium salts. Two samples within one year are to be taken from each treatment plant using a surface water source in order to account for the extremes in water quality variations, such as one sample in mid-summer or one sample in mid-winter (or high flow, low flow). During the course of the year, surface waters may undergo significant variations in pH, hardness, alkalinity, total dissolved solids and temperature which can influence the aggressiveness of the water. For instance, the total dissolved solids (TDS) content and the hardness of the water may vary considerably during periods of seasonal drought or rainfall. Addition of industrial discharges or "acid rain" may significantly affect the pH of the water, dependent upon the amount of water contributed relative to the size of the receiving body of the water. Variations in pH of the water may also be influenced by the natural buffering capacity of the water. Thus, to account for changes in water quality, surface water systems are required to determine the corrosivity characteristics twice during one year, taking each sample when the water quality is at an extreme for the year.

For groundwater sources, one sample per plant is required; less frequent

monitoring is appropriate for ground water systems because the quality of the water is relatively constant. Multiple wells from a common aquifer can be considered a single plant in regard to sampling requirements. States upon their discretion may increase the sampling requirements.

In certain cases the State may allow the use of the AI instead of the LI to determine the corrosivity of the water. In addition, the States may also require additional monitoring in instances where it is felt that the use of the LI would be inadequate as an indicator of the corrosive tendency of the water. The RI, which is based upon the same parameters as the LI is slightly more complicated to determine than the LI and the results indicate similar characteristics as the LI; thus, the RI was not included in these regulations. Use of the AI, which is less sensitive than the LI (i.e., the AI does not take into account the temperature and TDS of the water), is appropriate primarily for those systems which use asbestos-cement pipe in the distribution systems.

Table 1 summarizes the corrosivity characteristics associated with the Langelier and the Aggressive Indices.

Table 1.—*Corrosivity Characteristics as Addressed by Indices*[1]

Corrosive characteristics	Langelier [units]	Aggressive [units]
Highly aggressive	< −2.0	< 10.0.
Moderately aggressive	−2.0 to < 0.0.	10.0 to < 12.0.
Nonaggressive	> 0.0	> 12.0.

[1] As noted previously, indices may be an appropriate measure of corrosive characteristics in all cases.

(3) All community water supply systems are required to determine the presence and report to the State the materials of construction of the distribution system including service lines and home plumbing.

Systems are expected to implement corrosion control measures if the monitoring results indicate corrosive characteristics based upon the individual parameters or as indicated by the LI or AI. States are encouraged to provide directions and technical assistance to the public water systems in evaluating options for corrosion control. A discussion on available corrosion control treatment methods is included in the Statement of Basis and Purpose.

Analytical and Economic Considerations

The analytical methods to determine the parameters influencing corrosivity do not generally require sophisticated equipment or procedures. To calculate the LI (Standard Method No. 203, 14th Edition, as shown in Appendix B), it is necessary to determine the methyl orange alkalinity, calcium ion concentration, pH, temperature and total dissolved solids (TDS). The pH and temperature will have to be determined at the sample site, while the other parameters can be determined at the laboratory (Standard Methods #208, 212, 306, 403 and 424, 14th Edition). To calculate the AI, it is necessary to measure the alkalinity, calcium ion concentrations, and the pH. For details on the LI and the AI, see Appendix B.

The estimate for determining the LI, which includes all of the required parameters, by a commercial laboratory is approximately $20 (measurement of AI would be less). Based upon this estimate, the total national cost for the approximately 60,000 public water supply systems covered by this regulation is estimated to be $1.5 million. One time per capita costs for the smallest surface and groundwater systems (serving 25 people) are $1.60 and $0.80, respectively. One time per capita costs for the largest systems of both source types are expected to be less than $0.01. Costs for each system associated with the determination of the presence of materials in distribution systems are expected to be minimal. The majority of systems could probably accomplish this very quickly based upon common knowledge of local construction practices.

Additional information is presented in the Basis and Purpose Document and detailed comments and Agency responses are included in Appendix A.

Non-Community Water Supply Systems

The amendments for non-community water supply systems promulgated herein do not, with two exceptions, vary from those that were proposed in July 1979. The conditions for allowing nitrate levels up to 20 mg/l have been revised and the specific condition requiring the absence of nitrite has been deleted. However, levels above one mg/l nitrite should not be exceeded and States should take this factor into consideration when evaluating the applicability of this amendment to public water systems. In addition, the non-community system is required to notify annually appropriate local and State public health officials that the nitrate levels exceed 10 mg/l. The other revision was an extension of the deadline for nitrate monitoring for an additional six months to a total of 18 months beyond the original deadline of June 24, 1979. Not all non-community systems have been able to complete the monitoring and the revised deadline of December 24, 1980, should provide sufficient time for non-community systems to meet the requirements. The comments received on the other amendments involving the non-community water supply systems did not contain sufficient new information to require changes. The most significant comments involving the nitrate MCL are discussed below, while detailed analyses of these and other comments regarding the amendments for non-community water supplies are provided in Appendix A.

The majority of commenters supported the proposed amendment of the regulations which provides that nitrate levels up to 20 mg/l may be allowed for non-community systems. However, the commenters objected to the fourth and fifth conditions of the provision which stipulated that the supplier of water must demonstrate, to the satisfaction of the State, that "(4) no nitrites are present in the drinking water," and that "(5) no adverse health effects will result." These commenters indicated that the analytical test is extremely sensitive, and that in most cases, a measurable trace of nitrite would likely be present; thus, this condition could rarely, if ever, be met by the non-community water system. Some commenters suggested that a "realistic" nitrite limit be set at one mg/l. The health implications of nitrite are essentially the same as nitrate in regards to methemoglobinemia except that the effect of nitrite is direct since metabolism is not required to reduce the nitrate to nitrite. For community water systems, a maximum level of one mg/l nitrite was suggested in the Basis and Purpose Document supporting the nitrate MCL in the NIPDWR and a level of one mg/l nitrite has been established in Canada based upon the occurrence of methemoglobinemia. However, since this provision for allowing up to 20 mg/l nitrate is predicated upon not allowing access to the drinking water by infants, EPA has determined that it is not necessary to set a limit for the nitrite levels; thus, the condition that nitrites should not be present has been deleted. However, levels of nitrite should not exceed one mg/l and it is suggested that, in applying this provision, States should make a judgment based upon all relevant factors for each specific system, including the levels of nitrite.

In regards to the levels of nitrite, States should also consider that significant levels of nitrite in drinking water are usually an indicator of gross contamination by agricultural practices or sewage and reducing conditions. In these cases, examination of the source

of contamination and increased monitoring for microbiological contaminants would be recommended.

While the condition on nitrite has been deleted, the condition that states "no adverse health effects will result" has been retained. This condition is the final safeguard and is left as general guidance as a contingency if the other conditions are not met.

Several commenters felt that the proposed requirement that the suppliers notify local physicians was unclear and could impose a large burden for some supplies in the suburbs of a large city. This condition has been revised so that the supplier would notify appropriate local and State public health authorities on an annual basis. It is expected that the local and State health authorities would notify appropriate physicians in the locality of the public water system.

Economic and Energy Assessment

A detailed regulatory analysis of the proposed amendments was not conducted due to the routine nature of the amendments and the expected decrease in the economic burden associated with these amended NIPDWR. Further, these amendments are generally not expected to have significant impacts upon resources or reporting requirements. The economics associated with each of the amendments are explained below. Energy impacts are negligible.

Changes in the microbiological monitoring and reporting requirements should result in unquantifiable but known savings to local water supply facilities. The savings reflect fewer public notifications. Although these savings are relatively small on a national scale, they are significant to the water utilities affected.

It is anticipated that the amendment on alternate analytical methods will have a minimal economic impact. Laboratories that are presently using equipment for new alternate methods, will have cost savings, since the need for equipment purchase for the previously approved methods will be eliminated. No changes in costs are expected in laboratories that do not adopt these procedures. The overall economic effect of the amendment on alternate techniques should be no cost increase, and in some cases a cost savings, since a greater analytical flexibility will be provided.

Changes in the regulations which affect non-community water systems will result in savings associated with reduced monitoring and public notification. Again, the extent of these reductions will be small in terms of national costs, but may be significant for individual suppliers.

Changes in public notification requirements will decrease costs. Some of these savings will be significant for small supplies.

Changes in the fluoride regulations are only for clarification, and will not affect the associated cost in any way.

As indicated previously, a requirement for monitoring and notification of sodium concentrations in drinking water will result in new costs to drinking water utilities. Based upon $10 per sample analysis, total national annual costs associated with this regulation are estimated to be $450,000 with annual per capita costs for the smallest systems (25 customers) of $0.80 for surface supplies and $0.13 for groundwater supplies, and less than $0.01 for the largest systems of both source types. These new costs do not impact all systems since some States already require monitoring for sodium.

Monitoring for corrosivity characteristics does not require sophisticated equipment or procedures. Determination of the Langelier Index involves measurement of hardness, alkalinity, pH, total dissolved solids, and temperature (the Aggressive Index only requires hardness, alkalinity and pH); in many cases, the water system will be able to conduct the analyses in their own laboratory. For many of the smaller systems, States will likely continue providing analytical services to the utilities. Based upon an estimate of $20 per LI analysis by a commercial laboratory, the total one time national cost would be $1.5 million with maximum per capita costs for the smallest systems (25 customers) of $1.60 and $0.80 for surface and groundwater systems, respectively, and less than $0.01 per capita for the largest systems of both source types. Costs for each system associated with identifying the composition of materials of construction in the distribution systems are expected to be negligible.

In regard to reporting and resource impacts, it is expected that the reporting requirements will have negligible impacts because of the infrequency of monitoring and the fact that reporting would occur through the system already established and in use for compliance with the primary regulations. Thus, additional resources are not expected to be necessary at the Federal, State and local levels.

The effective date is immediately upon promulgation except that the requirements for sodium monitoring and reporting, determination of the types of materials in the distribution system, and monitoring and reporting corrosivity characteristics will be effective 18 months after date of promulgation. The sodium and corrosion requirements must be completed within 12 months following the effective date. The Statement of Basis and Purpose Document which provides additional supporting information for the sodium and corrosivity monitoring requirements is available upon request at EPA headquarters, 401 M Street, S.W., Washington, D.C., and for reading at EPA regional offices.

Under Executive Order 12044, EPA is required to judge whether a regulation is "significant" and therefore subject to the procedural requirements of the Order or whether it may follow other specialized development procedures. EPA labels these regulations "specialized." I have reviewed this regulation and determined that it is a specialized regulation not subject to the procedural requirements of Executive Order 12044.

Dated: August 19, 1980.

Barbara Blum,

Acting Administrator.

Accordingly, 40 CFR, Part 141, is amended as follows:

1. By revising § 141.6 (c) and (d) to read as follows:

§ 141.6 Effective dates.

* * * * *

(c) The regulations set forth in 141.11 (a), (c) and (d); 141.14(a)(1); 141.14(b)(1)(c); 141.14(b)(2)(i); 141.14(d); 141.21 (a), (c) and (i); 141.22 (a) and (e); 141.23 (a)(3) and (a)(4); 141.23(f); 141.24(a)(3); 141.24 (e) and (f); 141.25(e); 141.27(a); 141.28 (a) and (b); 141.31 (a), (c), (d) and (e); 141.32(b)(3); and 141.32(d) shall take effect immediately upon promulgation.

(d) The regulations set forth in 141.41 shall take effect 18 months from the date of promulgation. Suppliers must complete the first round of sampling and reporting within 12 months following the effective date.

(e) The regulations set forth in 141.42 shall take effect 18 months from the date of promulgation. All requirements in 141.42 must be completed within 12 months following the effective date.

2. Amending § 141.11 (a) and (d) to read as follows:

§ 141.11 Maximum contaminant levels for inorganic chemicals.

(a) The MCL for nitrate is applicable to both community water systems and non-community water systems except as provided by in paragraph (d). The levels for the other organic chemicals apply only to community water systems. Compliance with MCLs for inorganic

chemicals is calculated pursuant to § 141.23.

* * * * *

(d) At the discretion of the State, nitrate levels not to exceed 20 mg/l may be allowed in a non-community water system if the supplier of water demonstrates to the satisfaction of the State that:

(1) Such water will not be available to children under 6 months of age; and

(2) There will be continuous posting of the fact that nitrate levels exceed 10 mg/l and the potential health effects of exposure; and

(3) Local and State public health authorities will be notified annually of nitrate levels that exceed 10 mg/l; and

(4) No adverse health effects shall result.

3. Amending § 141.11(c) to read as follows:

§ 141.11 Maximum contaminant levels for inorganic chemicals.

* * * * *

(c) Fluoride at optimum levels in drinking water has been shown to have beneficial effects in reducing the occurrence of tooth decay.

4. Amending § 141.14 (a)(1), (b)(1)(i), (b)(2)(i), and revising (d) to read as follows:

§ 141.14 Maximum microbiological contaminant levels.

(a) * * *

(1) One per 100 milliliters as the arithmetic mean of all samples examined per compliance period pursuant to § 141.21(b) or (c), except that, at the primacy Agency's discretion systems required to take 10 or fewer samples per month may be authorized to exclude one positive routine sample per month from the monthly calculation if: (i) as approved on a case-by-case basis the State determines and indicates in writing to the public water system that no unreasonable risk to health existed under the conditions of this modification. This determination should be based upon a number of factors not limited to the following: (A) the system provided and had maintained an active disinfectant residual in the distribution system, (B) the potential for contamination as indicated by a sanitary survey, and (C) the history of the water quality at the public water system (e.g. MCL or monitoring violations); (ii) the supplier initiates a check sample on each of two consecutive days from the same sampling point within 24 hours after notification that the routine sample is positive, and each of these check samples is negative; and (iii) the original positive routine sample is reported and recorded by the supplier pursuant to § 141.31(a) and § 141.33(a). The supplier shall report to the State its compliance with the conditions specified in this paragraph and a summary of the corrective action taken to resolve the prior positive sample result. If a positive routine sample is not used for the monthly calculation, another routine sample must be analyzed for compliance purposes. This provision may be used only once during two consecutive compliance periods.

(b)(1) * * *

(i) More than 10 percent of the portions (tubes) in any one month pursuant to § 141.21 (b) or (c) except that, at the State's discretion, systems required to take 10 or fewer samples per month may be authorized to exclude one positive routine sample resulting in one or more positive tubes per month from the monthly calculation if: (A) as approved on a case-by-case basis the State determines and indicates in writing to the public water system that no unreasonable risk to health existed under the conditions of this modification. This determination should be based upon a number of factors not limited to the following: (*1*) the system provided and had maintained an active disinfectant residual in the distribution system, (*2*) the potential for contamination as indicated by a sanitary survey, and (*3*) the history of the water quality at the public water system (e.g. MCL or monitoring violations); (B) the supplier initiates a check sample on each of two consecutive days from the sampling point within 24 hours after notification that the routine sample is positive, and each of these check samples is negative; and (C) the original positive routine sample is reported and recorded by the supplier pursuant to § 141.31(a) and § 141.33(a). The supplier shall report to the State its compliance with the conditions specified in this paragraph and report the action taken to resolve the prior positive sample result. If a positive routine sample is not used for the monthly calculation, another routine sample must be analyzed for compliance purposes. This provision may be used only once during two consecutive compliance periods.

(b)(2) * * *

(i) More than 60 percent of the portions (tubes) in any month pursuant to § 141.21 (b) or (c), except that, State discretion, systems required to take 10 or fewer samples per month may be authorized to exclude one positive routine sample resulting in one or more positive tubes per month from the monthly calculation if: (A) as approved on a case-by-case basis the State determines and indicates in writing to the public water system that no unreasonable risk to health existed under the conditions of this modification. This determination should be based upon a number of factors not limited to the following: (*1*) the system provided and had maintained an active disinfectant residual in the distribution system, (*2*) the potential for contamination as indicated by a sanitary survey, and (iii) the history of the water quality at the public water system (e.g. MCL or monitoring violations); (B) the supplier initiates two consecutive daily check samples from the same sampling point within 24 hours after notification that the routine sample is positive, and each of these check samples is negative; and (C) the original positive routine sample is reported and recorded by the supplier pursuant to § 141.31(a) and § 141.33(a). The supplier shall report to the State its compliance with the conditions specified in this paragraph and a summary of the corrective action taken to resolve the prior positive sample result. If a positive routine sample is not used for the monthly calculation, another routine sample must be analyzed for compliance purposes. This provision may be used only once during two consecutive compliance periods.

* * * * *

(d) If an average MCL violation is caused by a single sample MCL violation, then the case shall be treated as one violation with respect to the public notification requirements of § 141.32.

8. Amending § 141.21 (a) and (c) to read as follows and adding (i):

§ 141.21 Microbiological contaminant sampling and analytical requirements.

(a) Suppliers of water for community and non-community water systems shall analyze or use the services of an approved laboratory for coliform bacteria to determine compliance with § 141.14. Analyses shall be conducted in accordance with the analytical recommendations set forth in "Standard Methods for the Examination of Water and Wastewater," American Public Health Association, 14th Edition, Method 908A, Paragraphs 1, 2 and 3—pp. 916–918; Method 908D, Table 908: I—p. 923; Method 909A, pp. 928–935, or "Microbiological Methods for Monitoring the Environment, Water and Wastes," U.S. EPA, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268—EPA–600/8–78–017, December 1978. Available from ORD Publications, CERI, U.S. EPA, Cincinnati, Ohio 45268. Part III, Section

B 1.0 through 2.6.2, pp. 108–112; 2.7 through 2.7.2(c), pp. 112–113; Part III, Section B 4.0 through 4.6.4(c), pp. 114–118, except that a standard sample size shall be employed. The standard sample used in the membrane filter procedure shall be 100 milliliters. The standard sample used in the 5 tube most probable number (MPN) procedure (fermentation tube method) shall be 5 times the standard portion. The standard portion is either 10 milliliters or 100 milliliters as described in § 141.14 (b) and (c). The samples shall be taken at points which are representative of the conditions within the distribution system.

* * * * *

(c) The supplier of water for a non-community water system shall be responsible for sampling coliform bacteria in each calendar quarter that the system provides water to the public. Such sampling shall begin within two years after promulgation. The State can adjust the monitoring frequency on the basis of a sanitary survey, the existence of additional safeguards such as a protective and enforced well code, or accumulated analytical data. Such frequency shall be confirmed or modified on the basis of subsequent surveys or data. The frequency shall not be reduced until the non-community water system has performed at least one coliform analysis of its drinking water and shown to be in compliance with § 141.14.

* * * * *

(i) The State has the authority to determine compliance or initiate enforcement action based upon analytical results or other information compiled by their sanctioned representatives and agencies.

9. Amending § 141.22(a) to read as follows and adding (e):

§ 141.22 Turbidity sampling and analytical requirements.

(a) Samples shall be taken by suppliers of water for both community and non-community water systems at a representative entry point(s) to the water distribution system at least once per day, for the purpose of making turbidity measurements to determine compliance with § 141.13. If the State determines that a reduced sampling frequency in a non-community system will not pose a risk to public health, it can reduce the required sampling frequency. The option of reducing the turbidity frequency shall be permitted only in those public water systems that practice disinfection and which maintain an active residual disinfectant in the distribution system, and in those cases where the State has indicated in writing that no unreasonable risk to health existed under the circumstances of this option. The turbidity measurements shall be made by the Nephelometric Method in accordance with the recommendations set forth in "Standard Methods for Examination of Water and Wastewater," American Public Health Association, 14th Edition, pp. 132–134; or Method 180.1,[1] Nephrometric Method.

* * * * *

(e) The State has the authority to determine compliance or initiate enforcement action based upon analytical results or other information compiled by their sanctioned representatives and agencies.

10. Amending § 141.23(a)(3), adding (a)(4) and amending (f) (1) through (10) to read as follows:

§ 141.23 Inorganic chemical sampling and analytical requirements.

(a) * * *

(3) For non-community water systems, whether supplied by surface or ground sources, analyses for nitrate shall be completed by December 24, 1980. These analyses shall be repeated at intervals determined by the State.

(4) The State has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by their sanctioned representatives and agencies.

* * * * *

(f) * * *

(1) Arsenic—Method [1] 206.2, Atomic Absorption Furnace Technique; or Method [1] 206.3, or Method [4] D2972–78A, or Method [2] 301.A VII, pp. 159–162, or Method [3] I–1062–78, pp. 61–63, Atomic Absorption—Gaseous Hydride; or Method [1] 206.4, or Method [4] D–2972–78A, or Method [2] 404–A and 404–B(4), Spectrophotometric, Silver Diethyldithiocarbamate.

(2) Barium—Method [1] 208.1, or Method [2] 301–A IV, pp. 152–155, Atomic Absorption—Direct Aspiration; or Method [1] 208.2, Atomic Absorption Furnace Technique.

(3) Cadmium—Method [1] 213.1, or Method [4] 3557–78A or B, or Method [2] 301–A II or III, pp. 148–152, Atomic Absorption—Direct Aspiration; or Method [1] 213.2, Atomic Absorption Furnace Technique.

(4) Chromium—Method [1] 218.1, or Method [4] D–1687–77D, or Method [2] 301–A II or III, pp. 148–152, Atomic Absorption—Direct Aspiration; or Chromium—Method [1] 218.2, Atomic Absorption Furnace Technique.

(5) Lead—Method [1] 239.1, or Method [4] D–3559–78A or B, or Method [2] 301–A II or III, pp. 148–152, Atomic Absorption—Direct Aspiration; or Method [1] 239.2, Atomic Absorption Furnace Technique.

(6) Mercury—Method [1] 245.1, or Method [4] D–3223–79, or Method [2] 301–A VI, pp. 156–159, Manual Cold Vapor Technique; or Method [1] 245.2, Automated Cold Vapor Technique.

(7) Nitrate—Method [1] 352.1, or Method [4] D–992–71, or Method [2] 419–D, pp. 427–429, Colorimetric Brucine; or Method [1] 353.3, or Method [4] D–3867–79B, or Method [2] 419–C, pp. 423–427, Spectrometric, Cadmium Reduction; Method [1] 353.1, Automated Hydrazine Reduction; or Method [1] 353.2, or Method [4] D–3867–79A, or Method [2] 605, pp. 620–624, Automated Cadmium Reduction.

(8) Selenium—Method [1] 270.2, Atomic Absorption Technique; or Method [1] 270.3; or Method [3] I–1667–78, pp. 237–239, or Method [4] D–3859–79, or Method [2] 301–A VII, pp. 159–162, Hydride Generation—Atomic Absorption Spectrophotometry.

(9) Silver—Method [1] 272.1, or Method [2] 301–A II, Atomic Absorption—Direct Aspiration; or Method [1] 272.2, Atomic Absorption Techniques Furnace Technique.

(10) Fluoride—Electrode Method, or SPADNS Method, Method [2] 414–B and C, pp. 391–394, or Method [1] 340.1, "Colorimetric SPADNS with Bellack Distillation," or Method [1] 340.2, "Potentimetric Ion Selective Electrode;" or ASTM Method [4] D1179–72; or Colorimetric Method with Preliminary Distillation, Method [2] 603, Automated Complexone Method (Alizarin Fluoride Blue) pp. 614–616; or Automated Electrode Method, "Fluoride in Water and Wastewater," Industrial Method #380–75WE, Technicon Industrial Systems, Tarrytown, New York 10591, February 1976; or "Fluoride in Water

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[1] "Methods of Chemical Analysis of Water and Wastes," EPA Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268 (EPA–600/4–79–020), March 1979. Available from ORD Publications, CERI, EPA, Cincinnati, Ohio 45268. For approved analytical procedures for metals, the technique applicable to total metals must be used.

[2] "Standard Methods for the Examination of Water and Wastewater," 14th Edition, American Public Health Association, American Water Works Association, Water Pollution Control Federation, 1976.

[3] Techniques of Water—Resources Investigation of the United States Geological Survey, Chapter A–1, "Methods for Determination of Inorganic Substances in Water and Fluvial Sediments," Book 5, 1979, Stock #024–001–03177–9. Available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

[4] Annual Book of ASTM Standards, part 31 Water, American Society for Testing and Materials, 1976, Race Street, Philadelphia, Pennsylvania 19103.

and Wastewater Industrial Method #129–71W," Technicon Industrial Systems, Tarrytown, New York 10591, December 1972; or Fluoride, Total, Colorimetic, Zirconium—Eriochrome Cyanine R Method [3]—I–3325–78, pp. 365–367.

11. Amending §141.24(a)(3), (e) and (f) to read as follows:

§ 141.24 Organic chemical sampling and analytical requirements.

(a) * * *

(3) The State has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by their sanctioned representatives and agencies.

* * * * *

(e) Analysis made to determine compliance with § 141.12(a) shall be made in accordance with "Methods for Organochlorine Pesticides and Chlorophenoxy Acid Herbicides in Drinking Water and Raw Source Water," available from ORD Publications, CERI, EPA, Cincinnati, Ohio 45268; or "Organochlorine Pesticides in Water," 1977 Annual Book of ASTM Standards, part 31, Water, Method D3088; or Method 509–A, pp. 555–565; [2] or Gas Chromatographic Methods for Analysis of Organic Substances in Water,[5] USGS, Book 5, Chapter A–5, pp. 24–39.

(f) Analysis made to determine compliance with § 141.12(b) shall be conducted in accordance with "Methods for Organochlorine Pesticides and Chlorophenoxy Acid Herbicides in Drinking Water and Raw Source Water," available from ORD Publications, CERI, EPA, Cincinnati, Ohio 45268; or "Chlorinated Phenoxy Acid Herbicides in Water," 1977 Annual Book of ASTM Standards, part 31, Method D3478; or Method 509–B, pp. 555–5692; [2] or Gas Chromatographic Methods for Analysis of Organic Substances in Water,[5] USGS, Book 5, Chapter A–3, pp. 24–39.

§ 141.25 [Amended]

12. Amending § 141.25 to add (e):

(e) The State has the authority to determine compliance or initiate enforcement action based upon analytical results or other information compiled by their sanctioned representatives and agencies.

13. Amending § 141.27(a) to read as follows:

§ 141.27 Alternate analytical techniques.

(a) With the written permission of the State, concurred in by the Administrator of the U.S. EPA, an alternate analytical technique may be employed. An alternate technique shall be accepted only if it is substantially equivalent to the prescribed test in both precision and accuracy as it relates to the determination of compliance with any MCL. The use of the alternate analytical technique shall not decrease the frequency of monitoring required by this part.

14. Amending § 141.28 to read as follows:

§ 141.28 Approved laboratories.

(a) For the purpose of determining compliance with § 141.21 through § 141.27, samples may be considered only if they have been analyzed by a laboratory approved by the State except that measurements for turbidity, free chlorine residual, temperature and pH may be performed by any person acceptable to the State.

(b) Nothing in this Part shall be construed to preclude the State or any duly designated representative of the State from taking samples or from using the results from such samples to determine compliance by a supplier of water with the applicable requirements of this Part.

15. Amending § 141.31 (a) and (c) and adding paragraphs (d) and (e) to read as follows:

§ 141.31 Reporting requirements.

(a) Except where a shorter period is specified in this part, the supplier of water shall report to the State the results of any test measurement or analysis required by this part within (A) the first ten days following the month in which the result is received or (B) the first ten days following the end of the required monitoring period as stipulated by the State, whichever of these is shortest.

* * * * *

(d) The water supply system, within ten days of completion of each public notification required pursuant to § 141.32, shall submit to the State a representative copy of each type of notice distributed, published, posted, and/or made available to the persons served by the system and/or to the media.

(e) The water supply system shall submit to the State within the time stated in the request copies of any records required to be maintained under § 141.33 hereof or copies of any documents then in existence which the State or the Administrator is entitled to inspect pursuant to the authority of § 1445 of the Safe Drinking Water Act or the equivalent provisions of State law.

16. Amending § 141.32 (b)(3) and (d) to read as follows:

§ 141.32 Public notification.

* * * * *

(b) * * *

(3) Except that the requirements of this subsection (b) may be waived by the State if it determines that the violation has been corrected promptly after discovery, the cause of the violation has been eliminated, and there is no longer a risk to public health.

* * * * *

(d) If a non-community water system fails to comply with an applicable MCL established in Subpart B of this part, fails to comply with an applicable testing procedure established in Subpart C of this part, is granted a variance or an exemption from an applicable MCL, fails to comply with the requirements of any schedule prescribed pursuant to a variance or exemption, or fails to perform any monitoring requirement pursuant to section 1445(a) of the Act, the supplier of water shall give notices by continuous posting of such failure or granting of a variance or exemption to the persons served by the system as long as the failure or granting of a variance or exemption continues. The form and manner for such notices shall be prescribed by the State and shall ensure that the public using the system is adequately informed of the failure or granting of the variance or exemption.

17. Amending Subpart E to read as follows:

Subpart E—Special Monitoring Regulations for Organic Chemicals and Otherwise Unregulated Contaminants

§ 141.41 Special monitoring for sodium.

(a) Suppliers of water for community public water systems shall collect and analyze one sample per plant at the entry point of the distribution system for the determination of sodium concentration levels; samples must be collected and analyzed annually for systems utilizing surface water sources in whole or in part, and at least every three years for systems utilizing solely ground water sources. The minimum number of samples required to be taken by the system shall be based on the number of treatment plants used by the system, except that multiple wells drawing raw water from a single aquifer may, with the State approval, be considered one treatment plant for determining the minimum number of samples. The supplier of water may be required by the State to collect and analyze water samples for sodium more

[5] Techniques of Water—Resources Investigation of the United States Geological Survey, Chapter A–3, "Methods for Analysis of Organic Substances in Water," Book 5, 1972, Stock #2401–1227. Available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

frequently in locations where the sodium content is variable.

(b) The supplier of water shall report to EPA and/or the State the results of the analyses for sodium within the first 10 days of the month following the month in which the sample results were received or within the first 10 days following the end of the required monitoring period as stipulated by the State, whichever of these is first. If more than annual sampling is required the supplier shall report the average sodium concentration within 10 days of the month following the month in which the analytical results of the last sample used for the annual average was received. The supplier of water shall not be required to report the results to EPA where the State has adopted this regulation and results are reported to the State. The supplier shall report the results to EPA where the State has not adopted this regulation.

(c) The supplier of water shall notify appropriate local and State public health officials of the sodium levels by written notice by direct mail within three months. A copy of each notice required to be provided by this paragraph shall be sent to EPA and/or the State within 10 days of its issuance. The supplier of water is not required to notify appropriate local and State public health officials of the sodium levels where the State provides such notices in lieu of the supplier.

(d) Analyses for sodium shall be performed by the flame photometric method in accordance with the procedures described in "Standard Methods for the Examination of Water and Wastewater," 14th Edition, pp. 250–253; or by Method 273.1, Atomic Absorption—Direct Aspiration or Method 273.2, Atomic Absorption—Graphite Furnace, in "Methods for Chemical Analysis of Water and Waste," EMSL, Cincinnati, EPA, 1979; or by Method D1428–64(a) in Annual Book of ASTM Standards, part 31, Water.

18. Adding a § 141.42 to read as follows:

§ 141.42 Special monitoring for corrosivity characteristics.

(a) Suppliers of water for community public water systems shall collect samples from a representative entry point to the water distribution system for the purpose of analysis to determine the corrosivity characteristics of the water.

(1) The supplier shall collect two samples per plant for analysis for each plant using surface water sources wholly or in part or more if required by the State; one during mid-winter and one during mid-summer. The supplier of the water shall collect one sample per plant for analysis for each plant using ground water sources or more if required by the State. The minimum number of samples required to be taken by the system shall be based on the number of treatment plants used by the system, except that multiple wells drawing raw water from a single aquifer may, with the State approval, be considered one treatment plant for determining the minimum number of samples.

(2) Determination of the corrosivity characteristics of the water shall include measurement of pH, calcium hardness, alkalinity, temperature, total dissolved solids (total filterable residue), and calculation of the Langelier Index in accordance with paragraph (c) below. The determination of corrosivity characteristics shall only include one round of sampling (two samples per plant for surface water and one sample per plant for ground water sources). However, States may require more frequent monitoring as appropriate. In addition, States have the discretion to require monitoring for additional parameters which may indicate corrosivity characteristics, such as sulfates and chlorides. In certain cases, the Aggressive Index, as described in paragraph (c), can be used instead of the Langelier Index; the supplier shall request in writing to the State and the State will make this determination.

(b) The supplier of water shall report to EPA and/or the State the results of the analyses for the corrosivity characteristics within the first 10 days of the month following the month in which the sample results were received. If more frequent sampling is required by the State, the supplier can accumulate the data and shall report each value within 10 days of the month following the month in which the analytical results of the last sample was received. The supplier of water shall not be required to report the results to EPA where the State has adopted this regulation and results are reported to the State.

(c) Analyses conducted to determine the corrosivity of the water shall be made in accordance to the following methods:

(1) Langelier Index—"Standard Methods for the Examination of Water and Wastewater," 14th Edition, Method 203, pp. 61–63.

(2) Aggressive Index—"AWWA Standard for Asbestos-Cement Pipe, 4 in. through 24 in. for Water and Other Liquids," AWWA C400–77, Revision of C400–75, AWWA, Denver, Colorado.

(3) Total Filtrable Residue—"Standard Methods for the Examination of Water and Wastewater," 14th Edition, Method 208B, pp. 92–93; or "Methods for Chemical Analysis of Water and Wastes," Method 160.1.

(4) Temperature—"Standard Methods for the Examination of Water and Wastewater," 14th Edition, Method 212, pp. 125–126.

(5) Calcium hardness—EDTA Titrimetric Method "Standard Methods for the Examination of Water and Wastewater," 14th Edition, Method 309B, pp. 202–206; or "Annual Book of ASTM Standards," Method D1126–67 (8).

(6) Alkalinity—Methyl Orange and paint pH 4.5. "Standard Methods for the Examination of Water and Wastewater," 14th Edition, Method 403, pp. 278–281; or "Annual Book of ASTM Standards," Method D1067–70B; or "Methods for Chemical Analysis of Water and Wastes," Method 310.1.

(7) pH—"Standard Methods for the Examination of Water and Wastewater," 14th Edition, Method 424, pp. 460–465; or "Methods for Chemical Analysis of Water and Wastes," Method 150.1; or "Annual Book of ASTM Standards," Method D129378 A or B.

(8) Chloride—Potentiometric Method, "Standard Methods for the Examination of Water and Wastewater," 14th Edition, p. 306.

(9) Sulfate—Turbidimetric Method, "Methods for Chemical Analysis of Water and Wastes," pp. 277–278, EPA, Office of Technology Transfer, Washington, D.C. 20460, 1974, or "Standard Methods for the Examination of Water and Wastewater," 13th Edition, pp. 334–335, 14th Edition, pp. 496–498.

(d) Community water supply systems shall identify whether the following construction materials are present in their distribution system and report to the State:

- Lead from piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing.
- Copper from piping and alloys, service lines, and home plumbing.
- Galvanized piping, service lines, and home plumbing.
- Ferrous piping materials such as cast iron and steel.
- Asbestos cement pipe.

In addition, States may require identification and reporting of other materials of construction present in distribution systems that may contribute contaminants to the drinking water, such as:

- Vinyl lined asbestos cement pipe.
- Coal tar lined pipes and tanks.

Appendix A—Response to Public Comments

Comments submitted to the Agency and statements presented at the public hearing in

response to the July 19, 1979, proposed regulations, are summarized below along with EPA's responses.

Community Water Supply Systems

141.11 Fluorides

Nineteen comments were received by the Agency as a result of EPA's endorsement of fluoridation practices and the addition of a statement to the NIPDWR clarifying that there is not a contradiction between the fluoride MCL and fluoridation practices. Eighteen of the comments dealt with the various aspects of established fluoride MCLs, treatment techniques to remove fluorides, monitoring and sampling for fluorides, and whether or not the MCL for fluorides should belong in the National Secondary Drinking Water Regulations (NSDWR) rather than in the NIPDWR. Only one commenter addressed EPA's action of endorsing fluoridation. This commenter felt that the Agency acted illegally since he felt that endorsement of fluoridation by EPA violates the spirit and the letter of the law.

The questions raised by the commenters regarding established MCLs, treatment techniques, and monitoring and analytical techniques were addressed when the NIPDWR and the NSDWR were promulgated and will again be considered in the development of the Revised Regulations. No changes to the existing MCL for fluoride were included in the proposal; thus, the comments were not directed toward the proposed regulations. In regard to the legality of EPA's action, a statement supporting the concept of controlled fluoridation does not violate Section 1412(b)(6) of the SDWA which states that "no primary drinking water regulation may require the addition of any substance for preventative health care purposes unrelated to contamination of drinking water." Thus, the statement of clarification and the statement that endorses fluoridation have been retained.

141.14 Microbiology

Ten commenters suggested that a change in the current coliform standard was needed. Seven objected to the monthly average MCL and expressed one or more of the following: a) States should have the option of adopting the monthly MCL requirement; b) the response time to non-compliance is too long for the "monthly average" MCL to be meaningful; c) relating health risk to the number of coliforms present is questionable: it is better to use coliform presence or absence as an indicator of bacteriological pollution; and d) good water supplies consistently show no coliforms; thus, coliform presence or absence should be used as the only indicator of bacteriological quality.

One commenter suggested that monitoring requirements should be based on source type rather than population. Another thought that fecal coliforms rather than total coliforms should be the required indicator. One commenter felt that criteria should be based on long-term monitoring surveillance of 12 to 76 months since few coliform occurrences actually indicate disease outbreaks.

These commenters' concerns were directed toward the coliform MCL rather than the specific requirements in the proposal. EPA is currently conducting a comprehensive evaluation of the regulations on microbiological contaminants and each of these comments will be carefully considered in development of the Revised Regulations.

Several commenters stated that the "and/or" provision of the amendment was unclear and suggested clarification prior to promulgation. Many commenters interpreted the amendment as requiring a system to have an active disinfectant residual before being eligible for excluding a sample from the monthly MCL calculation. Eight commenters opposed such a "prerequisite," some expressing that systems with no chlorine residual are more likely to have misrepresentative samples than systems having such a residual. Other commenters "agreed" with having a "prerequisite" of an active disinfectant residual.

The above commenters misinterpreted the wording of the amendment since maintaining an active disinfectant residual is not a prerequisite for being eligible for the provisions of the amendment. For purposes of clarification, the wording of the amendment has been changed. The amendment applies to all systems where the State has determined and indicated in writing that no unreasonable risk to health would exist as a result of this provision. While disinfection is not a requirement, EPA strongly encourages the maintenance of an active disinfectant residual, and this should be a major factor in States' determination of no unreasonable risk to health.

Seven commenters stated that the amendment should apply to all system sizes. Most argued that contamination of one sample in large systems would make them unjustly susceptible to a specious monthly MCL violation.

The amendment was proposed in response to problems of unnecessary public notification in small systems that may result from false positive analytical results that do not reflect the actual water quality. EPA has studied the distribution of single sample and average MCL coliform violations as a function of supply system size. As the number of monthly samples increases, the sensitivity of the monthly average to any high value decreases. Thus, EPA has determined that the spurious monthly MCL violations are minor in systems serving over 9,400. The amendment has, therefore, not been changed to include large systems.

Three commenters felt that additional latitude should be provided for small systems and the following items were suggested: (a) allowing the MCL to be exceeded more than once before requiring public notification; (b) allowing one of the negative check samples to be included in the monthly average calculation; (c) allowing use of the provisions for excluding one sample from the monthly average more than once per compliance period; (d) not requiring reporting to the State until either of the two check samples is positive; (e) making the amendment applicable for every compliance period; and (f) allowing small systems to be exempt altogether from public notification.

Each of these items has been considered in determination of the final provisions of the amendment. However, no changes were made in the amendment; EPA encourages stringent quality control in sampling and analysis and any lessening of the conditions set in this amendment could compromise the safety of the water served by small water systems.

Three commenters stated that "no unreasonable risk to health" should be defined so that the primacy agency can evaluate if a supplier is eligible for the amendment.

The purpose of this clause is to assure that in rendering that judgment the State conducts a comprehensive evaluation of each water system in order to assess the potential for contamination at each site. Strict definition of the criteria would not be possible since the State must evaluate all pertinent factors on a case-by-case basis. States are encouraged to initiate evaluations in a systematic manner prior to receiving a petition from the public water system, such that careful consideration, including a sanitary survey and an evaluation of the history of the water quality (e.g., MCL or monitoring violations), can be given to all appropriate factors. It is not expected that systems maintaining a disinfection residual in the distribution system would receive an automatic approval for application of this provision; however, this should be a prime factor in the determination of "no unreasonable risk to health" since the evaluation should be conducted on a case-by-case basis of all relevent factors.

Two commenters felt that the proposed amendment was too lenient since small systems tend to have greater disease incidence than larger ones. Their suggestions included increasing the required monitoring frequency to at least four samples per month, and requiring disinfection for all systems that take less than ten samples per month.

EPA will consider those suggestions as it prepares the Revised Primary Drinking Water Regulation. The current amendments are intended for the interim until Revised Regulations are formulated. EPA strongly encourages disinfection and maintenance of an active disinfectant residual to prevent contamination in the distribution system and to provide a margin of safety. In regard to increased monitoring or requiring disinfection, many small systems already practice disinfection but experience problems in a higher incidence of coliform violations than in large systems partly because of inconsistent operation or distribution system problems. EPA believes that health risks for such systems could be minimized by better operation and maintenance and compliance with existing regulations. The amendment should reduce average MCL violations caused by spurious sample results for small systems without compromising the safety of the water to the public. It is again emphasized that these are interim regulations and these commenters concerns will be carefully considered in development of the Revised Regulations.

One commenter stated that the concept of 24-hour follow-up "check samples" is not feasible because of unavailable mail or laboratory service on the weekend.

Many laboratories provide service through the weekend, and samples can be sent

expeditiously via private postal bus service. Wherever possible, utilities not having easy access to weekend coliform analyses should attempt to monitor in the early part of the week, allowing for the contingency of follow-up "check samples" prior to the weekend.

One commenter felt that the amendment does not indicate what action should be taken if one or both check samples are positive.

The amendment states that each of the check samples must be negative in order to exclude the original positive sample from the compliance requirements. This indicates that if either of the check samples is positive the original positive sample must be used for computing the single sample and monthly average value.

One commenter interpreted the amendment to result in additional samples being taken; under the existing regulation a single sample exceeding four coliforms per 100 ml can be discounted if it is followed by two successive negative samples; the amendment would require two negative check samples and another sample to replace the original, a total of three samples.

The commenter is correct with respect to the single sample MCL. However, under the existing regulations, two successive negative check samples do not allow the original positive sample to be excluded from the average monthly MCL. If the minimum number of samples required per month is four or less, at least one additional sample (in addition to the two negative check samples) would need to be taken for the system to meet compliance with the average MCL. With the amendment, only one additional sample is needed. EPA encourages proper sample collection and handling practices; additional sampling should not be considered a burden since the drinking water was either actually contaminated or the sample was improperly collected or handled.

One commenter stated that the amendment is not clear as to whether the water utilities must petition to the State each time they seek use of this amendment or whether they can forego such petitions until after they have already excluded one positive sample from the monthly MCL calculation once within two successive compliance periods.

In order to be eligible for excluding one positive sample from the averge MCL calculation, the utility must petition the State within 24 hours following two successive negative check samples. The utility is only eligible for one such exclusion within two successive compliance periods.

One commenter felt that non-compliance of both single sample and average MCLs within one month should be treated as a single violation with respect to public notification.

EPA agrees in the case of a single sample leading to non-compliance of both MCL standards. The amendment has been changed to include this consideration.

One commenter stated that "active disinfectant residual" needed to be defined.

This phrase is commonly understood to mean the presence of an anti-microbial oxidizing agent such as a free chlorine, combined available chlorine ($Cl_2 + NH_3$), or chlorite residual. Since the State regulates which oxidants are permissible, the term has not been specifically defined in order to provide States latitude in making this determination.

In the preamble of the proposed amendments, it was stated that the laboratory director could discard samples known to be defective due to poor sampling or transit techniques. Three commenters felt that a laboratory director would not be qualified for exercising such judgment.

The laboratory director can in many cases, on the basis of the condition of the sample (e.g. lid off or sediment on top), excessive transit time (greater than 48 hours for coliforms), or inadequate transit conditions (e.g. insufficient refrigeration) decide if the sample would not be valid. The laboratory director should reject such samples from analysis to prevent the generation of misrepresentative data. The laboratory cannot reject a sample that has already been analyzed unless he is aware of an error in the analyses that was conducted.

The preamble of the proposal included a discussion on sample storage time requirements. Three commenters suggested this was inappropriate since no change in these requirements was being made. Two commenters were opposed to EPA requiring samples having more than a 48-hour transit time to be precluded from analysis. They suggested that the 48-hour cut-off point be used as guidance but allowing exceptions under certain conditions. One commenter felt that the 48-hour cut-off point lacked supporting data and could be unjust to the supplier because of slow postal service.

In cases of expected long transit time with the postal service, EPA suggests using the mail service provided by private bus companies. The storage time studies, referred to in the proposal, are still not complete. Until then, EPA expects utilities to analyze samples as soon as possible following collection and certainly within 30 hours of collection. The 14th edition of "Standard Methods for Examination of Water and Wastewater" recommends that samples be processed within one hour of collection. If transit time extends beyond 6 hours, the sample should be refrigerated and consideration given to analysis by a local laboratory facility. "Standard Methods for Examination of Water and Wastewater" further recommends that since drinking water samples often have to be transported by mail, the total elapsed time between collection and analysis should not exceed 30 hours. Under extraordinary circumstances a 48 hour transit time will be permitted, but State programs should be developed to keep transit time to a minimum. Samples awaiting analysis after 48 hours should be rejected.

One commenter indicated that the proposal had incorrectly paraphrased section 906B in the 14th edition of "Standard Methods for the Examination of Water and Wastewater," in saying that "if transit time extends beyond 6 hours, the sample should be refrigerated and consideration given to analysis by a local laboratory." The commenter indicated that the text suggests this for stream samples while EPA implies it pertains to drinking water analysis.

This was not the intent of EPA. The preamble also included a succeeding passage from Section 960B which specifically recommended "that since drinking water samples have to be transported by mail, the total elapsed time between collection and analysis should not exceed 30 hours."

141.21 Microbiological Contaminant Sampling and Analytical Requirements

Three comments were received concerning the proposed amendment; all fully supported the amendment and thus no changes were made.

141.23 Compliance Monitoring and Record Maintenance

Five comments were received concerning the proposed amendments on compliance monitoring and record maintenance; four fully supported the amendments. One of these commenters suggested that the primacy agency should inform the supplier in writing of the intent to conduct sampling and work cooperatively in selecting representative sampling locations in the distribution system.

Notification of the public water system by the State of the intent to sample and determination of representative sampling locations in a cooperative operation is considered normal operating procedures for most States, and is in their best interests. However, in certain cases, such as compliance audits or enforcement cases, this might be inappropriate. No change has been made in the amendment.

141.27 Alternate Analytical Techniques

Eleven comments were received concerning the alternate analytical techniques specified in the proposal. Eight commenters supported the amendments and three expressed no value judgment but made specific comments.

Two commenters felt that the alternate analytical techniques should be listed in Sections 141.22, 141.23, and 141.24 for simplicity.

As suggested, the alternate analytical techniques are listed in Sections 141.22, 141.23, and 141.24.

One commenter remarked that EPA is very slow to accept new methods and to inform laboratories and chemists when such new methods are acceptable.

In many cases, considerable time is needed to evaluate the acceptability of an alternate method. Often incomplete or unclear data are provided in comparing alternate methods with approved methods and frequently several iterations in data review and requests for additional information are necessary between EPA and the laboratory before evaluation can begin. The package must be reviewed by the EPA Environmental Monitoring and Support Laboratory (EMSL) (Cincinnati) for analytical approval and by EPA, Office of Drinking Water (Washington, D.C.) for consistency with regulatory concerns.

One commenter suggested that EPA publish in the **Federal Register** new alternate techniques on a regular time basis and that the methods in the NIPDWR should be updated.

EPA agrees that new alternate approved methods will periodically be published in the **Federal Register**. Also, methods in the

NIPDWR have been updated and are included in the regulations.

Two commenters stated that the degree of accuracy of alternate methods should be equivalent to those already prescribed before being considered as alternate analytical techniques.

This is the intent of the provision for alternate analytical techniques. An alternate analytical technique shall only be accepted for compliance purposes if it is equivalent to the prescribed test in accuracy and precision, and has EPA and State approval.

One commenter cited their laboratory as being unable to get reproducible results on the Flameless A.A. and Graphite Furnace Technique for arsenic and selenium analysis, and suggested that further study is needed before these methods are "approved."

EMSL has received substantial data from many laboratories indicating equivalent precision and accuracy to the prescribed techniques for these parameters. These techniques have thus been approved for compliance monitoring for arsenic and selenium.

141.28 Approved Laboratories

The two comments received pertaining to use of approved laboratories expressed full agreement.

141.30 Corrosion Control

Sixty-eight comments were received by EPA regarding the amendment involving corrosion control. The comments dealt with a wide range of issues, involving the legal, health and procedural aspects of the amendment. Twenty-three of the commenters concurred with the Agency's overall approach to control corrosion, but twenty-one of these expressed reservations about some aspect of the amendment. Thirty of the commenters objected to the amendment on legal and procedural grounds. The remainder of the fifteen commenters did not express support or opposition to the amendment but provided recommendations.

Thirteen of the commenters objected to the proposed amendment because it did not contain specific requirements. The commenters questioned the Administrator's legal authority to promulgate this amendment, arguing that it is not enforceable since specific requirements for a maximum contaminant level or requirements for treatment technique were not specified. A number of these commenters objected because the Agency did not provide an adequate definition for corrosivity. The commenters felt that the use of the various indices as proposed by the Agency does not provide an acceptable criteria for corrosivity. However, several commenters did state that the indices could be used as indicators of corrosive characteristics in some locations. In addition, the commenters felt that the Agency should be more specific in regard to providing guidelines for monitoring and survey techniques to identify corrosive waters.

Since corrosion is a complex phenomenon and the presence and occurrance of contaminants in different water supply systems is unique, the Agency felt that States and utilities should be given as much latitude as possible to identify and solve the problem on a case-by-case basis. However, the Agency also feels that specific requirements are desirable in setting forth most regulatory programs. Therefore, because of the concerns of public water systems and State agencies, the regulations have been revised. The Agency continues to emphasize that corrosion is a serious concern and has decided to confront the problem as follows:

EPA has established monitoring and reporting requirements in these regulations for corrosivity related characteristics by community water systems, including measurements of pH, calcium hardness, alkalinity, temperature, total dissolved solids, and the Langelier Index (or the Aggressive Index in certain cases). In addition, States may require monitoring for other parameters that may affect the corrosivity of the drinking water such as sulfates and chlorides. Furthermore, it is required that community water supply systems determine and report to the States the presence of materials of construction of their distribution system which may be potential sources of contaminants such as lead, cadmium, copper, iron, zinc and asbestos fibers. It is expected that the information gained as a result of this amendment will increase the awareness of the water supplier to corrosion related problems in his system and provide a basis for judgment by the State to determine whether the water system is vulnerable to contamination by corrosion products. For systems distributing water that has corrosive characteristics, these systems are expected to implement corrosion control measures, with the direction and guidance of the State. In addition, the Agency will propose in a separate rulemaking an amendment which will require that systems which are vulnerable to contamination by corrosion by-products to monitor for corrosion-related contaminants at an increased frequency and implement appropriate measures to remove and control corrosion-related contaminants where needed.

Four of the commenters expressed concerns about the supplier's legal authority to enter homes to conduct surveys, sampling and monitoring. Because of the lack of such authority, the commenters argued that compliance with the regulation would be difficult or impossible.

The commenters' concerns relative to obtaining samples and complying with the regulations has not been a problem to date in compliance with other requirements of the NIPDWR. It is expected that suppliers will be able to continue obtaining the consent of homeowners for survey and sampling purposes. If consent is not granted, suppliers should look toward other homes or possibly public buildings.

Seven of the commenters expressed concerns and questioned the legality of their responsibility regarding the water quality at the consumer's tap. The commenters reasoned that they should not be responsible for the deterioration of water quality beyond the distribution system not under the purveyor's jurisdiction since the changes made to the water quality by the consumer are not under the supplier's control. The commenters were concerned about legal recourse for not meeting the MCL due to corrosion from appurtenances which are under the control of the user.

The definition of "maximum contaminant levels" in Section 141.2(c) of the NIPDWR specifically excludes "contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality." Thus, public water systems must take into consideration the types of materials used in service connections and in home plumbing. EPA believes that the water supplier is responsible for deterioration of water quality for problems within the supplier's control; adequate protection is provided in the NIPDWR so that legal action against the water supplier would be limited to corrosion problems only within the supplier's control.

Eight of the commenters recommended that regulations for corrosion control are more appropriately addressed in the NSDWR. They felt that corrosion is related to aesthetic and economic phenomenon rather than to health concerns.

Aesthetic effects associated with corrosion such as taste and discoloration resulting from corrosion by-products, such as copper, zinc and iron, are appropriately dealt with in the NSDWR. However, contaminants at the consumer's tap resulting from the corrosive action of waters could also include lead and cadmium which are health-related contaminants. Therefore, due to the presence of health-related contaminants resulting from the corrosive action of water on materials in distribution systems, the inclusion of corrosion control in the NIPDWR is also appropriate.

Eighteen commenters addressed EPA's proposal to establish an MCL or MCLs for corrosion using one or more corrosivity indices including the Langelier, Ryznar and the Aggressive indices. Three commenters supported EPA's proposal to establish MCLs for corrosivity indices; one commenter noted that this approach would be beneficial in areas having soft corrosive waters and another of these commenters suggested that an MCL be established for all of the three indices proposed by EPA. Three commenters indicated that use of the indices to determine corrosivity would be acceptable.

Fifteen of the commenters opposed MCLs based upon the indices; they argued that the suggested indices are not universally applicable. These commenters felt that the indices cannot define an MCL since they do not define specific contaminants but rather a tendency of water quality. In addition, the commenters felt that establishment of MCLs would limit flexibility for utilities to select a treatment for corrosion control. The commenters also expressed concern about the economic implications associated with the reduced options available for the utilities to select a treatment approach since they felt that treatment techniques to stabilize the water for corrosion control may be more expensive than utilizing inhibitors for corrosion control.

The Agency feels that evaluation of each of the parameters used in calculating the indices as well as the indices themselves is a viable approach to identifying corrosion in drinking water; in many instances as pointed out in

the preamble of the proposal, the indices may not be applicable to certain water types. EPA agrees with the commenters that in some instances alternate treatment methods such as the addition of phosphates or silicates, or the increase of the alkalinity of the water, may be just as effective and more economical than utilizing the principle of calcium carbonate saturation for corrosion control. In acknowledging this, the Agency indicated in the proposal that "allowances would be made for methods achieving non-corrosive waters not meeting a MCL based on the calcium carbonate stability of the water." On the basis of the comments received and further study, the Agency has decided that establishment of MCLs (which was presented as an alternate approach) based on the proposed corrosivity indices is not feasible at the present time. However, the indices and their supporting measurements are acceptable as indicators of corrosivity characteristics, and thus, as noted previously, the regulations were changed to require monitoring and reporting for the pH, alkalinity, hardness, temperature, total dissolved solids and Langelier Index (or in certain cases the Aggressive Index).

Nineteen of the commenters recommended that corrosion control be implemented through the adherance to the MCLs established in the NIPDWR. Among these commenters, some felt that corrosiveness of the water could be determined by comparing the specific contaminant levels in the water entering the distribution system to those found in the water leaving the distribution system.

Comparison of contaminant levels in the water entering and at specific locations in the distribution system has successfully demonstrated the corrosive action of water. In addition such comparison of specific contaminant levels is a useful tool to determine the effectiveness of treatment techniques aimed at reducing corrosion. This approach will be considered in the regulations to be proposed which will require increased monitoring for systems with corrosive waters and vulnerable materials of construction in the distribution system.

Other commenters noted that adherence to the MCLs established in the NIPDWR would be sufficient to define corrosion products, and therefore, there is no need for the Agency to establish additional regulations.

The regulations promulgated herein are appropriate as they will provide an indication of which systems are distributing corrosive water. However, as noted in the preamble, the revised strategy for corrosion control will be partly through adherence to existing MCLs. However, the existing monitoring requirements may not be sufficient in all cases to determine the presence of corrosion-related contaminants. Because of the many kinds of piping materials used in the distribution system, careful selection of representative monitoring points along with a sufficient number of samples, are essential to assess the extent of corrosion by-products. For this reason, the Agency will propose in the near future an amendment which would specify increased monitoring frequencies geared to the potential presence of corrosion-related contaminants that would exceed an MCL.

Ten commenters argued that reference to asbestos and organic materials should be deleted from the regulations. The commenters raising this issue felt that making reference and including asbestos and organic compounds is improper since there are no established MCLs for these contaminants. In addition, the commenters felt that EPA did not provide specific guidance for the monitoring of these contaminants.

In referring to asbestos and organic contaminants in the preamble and the Statement of Basis and Purpose, the Agency's intent was to point out other adverse effects associated with the distribution of corrosive waters. For example, deterioration of asbestos cement pipe in contact with corrosive waters will result in economic losses to the purveyor and high levels of asbestos fibers in the drinking water. The potential health effects associated with the presence of asbestos fibers originating from distribution systems are under study. Prior to the completion of the studies, the Agency encourages utilities to take appropriate corrosion control and other measures to minimize levels of asbestos fibers in the drinking water.

Four commenters suggested that corrosion control should be achieved by the installation of proper materials into the distribution system rather than by regulating the quality of the water.

The suggestion by the commenters to achieve corrosion control by the proper selection and use of materials may be helpful for reducing potential corrosion when dealing with new systems or when replacing the components of old ones. However, this approach would not alleviate or reduce problems in existing systems where it may not be economical or feasible to replace components. In addition, where waters are corrosive, selection of proper materials without the appropriate treatment of the water may not be sufficient to solve the problem. Sound judgment in selecting and installing proper materials into the distribution system is considered good engineering practice and may alleviate some of the problems associated with corrosion in newly constructed systems or in old systems where pipes are being replaced. The Agency is encouraging the practice of replacing lead pipes conveying drinking water in existing systems. In addition, EPA is actively pursuing the elimination of lead from plumbing code specifications as an acceptable material for the transportation of drinking water.

Nine commenters felt that no regulations should be established for corrosion control since corrosion is dependent on other variables in addition to water quality. The commenters recommended that instead of regulations the Agency should establish guidelines for corrosion control.

Although corrosion is indeed a complex phenomenon, experience indicates that the problem can be solved by application of appropriate treatment techniques and the monitoring of contaminant levels. However, available information shows that control of corrosion while a serious concern is not a high priority area at most public water systems. Because of this and the health risks associated with contaminants resulting from corrosive waters where MCLs are being exceeded, there is a need for regulatory action. It is felt that these regulations will provide States with data that will indicate which systems should implement corrosion control measures.

Nine commenters felt that the treatment techniques suggested by the Agency for corrosion control are in conflict with the SDWR and the NIPDWR. The commenters raising this issue pointed out that treatment techniques for corrosion control such as adjustment of pH and utilizing compounds containing zinc and sodium are in conflict with the Agency's attempt to minimize the presence of these substances and to maintain pH levels within values established by the NSDWR.

Utilities should use discretion when applying compounds containing sodium. Use of corrosion control chemicals containing sodium should be limited to instances where the sodium levels are low in the raw water. Use of lime for corrosion control can often alleviate the possible conflicts with established MCLs. Regarding adjustment of pH, control of corrosion can be accomplished by maintaining pH levels within the range established by the NSDWR, provided appropriate adjustments of hardness and alkalinity are made. However, it is recognized that some water systems may necessarily operate at pH ranges higher than stated in the SDWR. The SDWR do not preclude States from allowing higher pH levels where local conditions make such higher levels appropriate.

Seventeen comments dealt with the implementation of the proposed regulations for corrosion control. Five of these commenters felt that the States may not be able to implement the proposed amendment due to the lack of resources. The commenters felt that utilities, especially small ones, would encounter problems of installing corrosion control treatment measures. Twelve commenters felt that the 18 month period allotted would not be sufficient to implement the regulation. Recommendations for increasing the time between promulgation to compliance ranged from 2 to 5 years.

The regulations have been revised to reduce the burden on the State and the water utilities. The final regulations require identification of the presence or absence of specific materials in distribution systems and monitoring and reporting for pH, alkalinity, hardness, temperature, total dissolved solids, and the Langelier Index or the Aggressive Index. Monitoring for these parameters are not sophisticated analyses and reporting of the data can be done along with other parameters required in the NIPDWR. Thus, the burden upon utilities and States is not considered significant. The effective date of the regulations is set at 18 months from promulgation and the corrosion requirements must be completed within 12 months following the effective date.

Nine comments were received regarding the health effect implications cited in the proposal in support of the establishment of regulations for corrosion control. Three of the commenters did not accept the health basis for the proposed corrosion control regulations. One of these felt that corrosion is

an aesthetic and economic problem and not related to health, noting that average exposures to heavy metals cannot be greater than allowed by the NIPDWR. Another of these commenters felt that there is no adverse health effect attributable to corrosive waters and that the effects of the products of corrosion are already addressed in the NIPDWR.

Lead and cadmium which often occur in plumbing materials have been found to leach into soft corrosive drinking water. The adverse health effects associated with these materials have been proven, and are discussed in the NIPDWR. However, monitoring for these compounds at the frequency set in the NIPDWR may not always determine levels of these compounds that are representative of drinking water qualities throughout the distribution system due to the wide distribution of various piping materials. The new proposal will focus upon increased monitoring for corrosion by-products, such as lead and cadmium, and implementation of corrosion control through compliance with established MCLs.

Several commenters noted that EPA's claim regarding the relationships between corrosivity and cardiovascular disease (CVD) and hypertension are speculative and without evidence. These commenters felt that the relationships between soft water, corrosive water, the products of corrosion, a "water factor" and cardiovascular disease rates are very unclear, and not adequately supported by current data to support the corrosion control regulations. One of these commenters did not feel that a link existed between CVD and the presence of metals such as cadmium, copper, lead and zinc in drinking water.

On the other hand, one commenter, in support of the proposed corrosion control regulation, stated that the cardiovascular disease rate could be decreased 6.3/million for each one part per million (ppm) of hardness increased. The commenter claimed that health benefits would exceed treatment costs by 300 times since 13,825 lives could be saved per year if hardness of drinking water were maintained above 60 ppm.

Results of epidemiological studies indicate that there may be an increased incidence of cardiovascular disease associated with the consumption of soft, corrosive waters (see Statement of Basis and Purpose). However, the Agency agrees that this issue needs more study. For this reason, the Agency is closely following and funding further research and special projects in this area to resolve this question.

One commenter urged discussion of beneficial, as well as adverse health effects in all regulations.

EPA agrees that the beneficial effects of some drinking water constituents should be considered when they exist. EPA agrees that consideration should be given to presenting as complete a picture of the effects of drinking water constituents as is possible in light of present knowledge. EPA is expending considerable efforts through research and special studies attempting to assess beneficial aspects of constituents in drinking water. A more detailed discussion of the role of corrosive waters affecting health is provided in the Statement of Basis and Purpose to these regulations. In addition, in response to a request from the Office of Drinking Water, EPA, a report has been prepared by the NAS entitled, "The Contribution of Drinking Water to Mineral Nutrition in Humans," which provides information on the beneficial aspects of chemicals in water.

Three commenters felt that the economic analyses referenced and developed by EPA to support the amendment are inadequate and overstated. The commenters stated that the benefit-cost ratios cited by EPA are not in agreement and subject to debate. On the other hand, one commenter agreed with the Agency approach regarding the economic impact of corrosion and indicated that EPA's benefit-cost ratios were conservative.

Although there may be some disagreements concerning the cost estimates cited by EPA, there is no question about the fact that the economic benefits realized in reducing maintenance, energy requirements and reduction of water losses are several times over the costs associated with corrosion control. This has been demonstrated by several utilities who have initiated and successfully practice corrosion control. Since conditions are not universal in water supply systems distributing corrosive waters, it is expected that there would be a range of costs associated with the implementation of corrosion control measures, where needed. The economic analysis has been revised to reflect the changes in the regulations; costs for monitoring for corrosivity are included.

141.31 Reporting Requirements

Three commenters were opposed to changing the required reporting time. They felt that since the NIPDWR are based on long-term exposure, and that the problems of immediate health risk are already considered in the existing regulations (Section 141.31(b) states that non-compliance with any MCL must be reported within 48 hours), there was no need to shorten the required reporting time. Three other commenters suggested that the reporting requirement should be within the first 10 days of the month following the month in which sample results are received by the supplier (one commenter suggested 15 rather than 10 days). Since MCL violations are to be reported within 48 hours, the commenters felt that a longer reporting time would not impact upon the potential health risk to consumers; in addition, the commenters stated that a longer reporting time would provide flexibility to equalize their workloads.

EPA recognizes that the public is normally protected from health risks by the requirement that supplier must notify the primacy agency within 48 hours when an MCL is exceeded. The primacy agency, however, cannot know if the supplier fails to comply with this requirement until it receives the data. Thus, requirements for a shorter reporting time within reasonable limits are considered appropriate in order that systems that exceed standards be identified as early as possible. The amendment will almost halve the reporting times for infrequently monitored parameters without significant inconvenience to the supplier. In addition, the amendment also provides for reporting of all parameters at the same time and thereby will reduce clerical work in meeting reporting requirements.

Two commenters stated that the supplier should only be required to maintain and make available results upon request or which violate MCL regulations. They felt that the reporting of all analyses is unnecessary and costly.

Requiring reporting of data assures that required monitoring frequencies and compliance with MCLs are met. It also helps establish a data bank from which water quality trends can be studied for the purpose of re-evaluating existing regulations.

One commenter questioned the semantics of the amendment. He felt that "results of any test, measurement, or analysis. * * *" should read "copies of results of any test, measurement, or analysis. * * *"

"Results" symbolize a categorization of data and thus "copies of results" are no different than "results." The wording does not require the original data sheet to be sent to the primacy agency but rather the data itself. The language has thus not been changed.

141.32(b) Public Notification

Two commenters incorrectly thought that the amendment would allow community systems in violation of an MCL not to notify authorities if the problem was likely to be corrected.

A public water system is required to notify the primacy agency of any violation, whether it is corrected immediately or not. This is clearly stated in § 141.31(b). The primacy agency can determine if public notification has been implemented in cases of non-compliance, and if not, it is expected that the primacy agency would provide specific directions to the water system.

One commenter stated that the State rather than EPA should have the authority and responsibility to require consumer notification where it feels it is appropriate; this would reduce the printing and mailing of notices concerning minor water quality violations. Another commenter felt that the amendment decreases State flexibility in administering their program without any apparent benefit.

EPA believes that the appropriate conditions for public notification are as defined in Section 141.32. The amendment gives the State discretion to waive the notification requirement if the violation has been corrected and there is no longer a risk to public health.

One commenter stated that State agencies do not have the resources to interpret whether suppliers should be granted a waiver. Therefore, waivers might be unjustifiably denied.

These provisions allow State agencies to make a determination based upon the available information and thus provide latitude to the States in implementing the public notification requirements of the NIPDWR. It is not expected that the evaluation to determine the appropriateness of a waiver will be very time-consuming. Thus, because of the desireability to provide States as much latitude as feasible, the amendment was not changed.

One commenter expressed the need for more data in determining the significance of coliforms with respect to disease incidence. The commenter suggested that media notification of coliform MCLs may encourage the reporting of waterborne diseases; thus, providing more data for evaluating the correlation between disease incidence and coliform counts. If the public is aware of potential contamination in their drinking water, they might be inclined to report their sickness to the public health authorities thinking it could be water related. Such reportage might never occur if the public were not notified. States should thus take these considerations into account before waiving media notification.

In the proposed amendment, one of the conditions of the waiver was the "* * * the violation has not posed a risk to public health." The question of whether a violation *has posed* a risk to public health would often be difficult to assess and for cases where this would be indeterminable, the commenter raises a point for not waiving notification requirements. However, the wording of the final amendment has been changed to "* * * the violation no longer poses a risk to public health;" this will make it easier for the primacy agency to judge when to grant a public notification waiver. The main criteria used should be whether the system is meeting compliance with the previously violated MCL. With the new wording of the amendment, the commenter's consideration for States not waiving notification requirements would no longer apply.

One commenter stated that community systems should be required to give repeat notices until the failure to comply with MCLs is remedied.

As required in the NIPDWR, renewed notification is required every three months if the utility does not remedy the situation.

One commenter thought that the first notice to the public should be given within 24 hours of the time the supplier first learns of non-compliance with the regulation.

In the case of an imminent health risk, the State, which is required to be informed within 48 hours of any violation, has the option to require immediate and extensive public notification. In cases where non-compliance does not pose an immediate health risk, the utility can avoid public notification by quickly solving the problem, contingent upon State approval.

141.41 Special Monitoring for Sodium

Twenty-nine commenters opposed the direct public notification requirement for sodium levels. Most of these favored restricting notification to public health agencies and/or physicians allowing the public to be informed through these resources upon their own request. Some thought that EPA or the State rather than the supplier should provide such notification. Eight commenters thought notification to the State/EPA and/or physicians should only be required if the sodium levels were high (i.e., 20 mg/l to 270 mg/l). Their rationale presented included:

(a) Since sodium levels only affect a small population there is no need to inform everybody. Much of the public might be confused and/or falsely alarmed over reported sodium concentrations on water bills. If water bills were used to indicate sodium levels, many thought a clarifying statement would be necessary. Many commenters alleged that not enough space would be available for additional clarifying material and that it would not necessarily be cost-effective.

(b) The public is not publicly notified about the sodium content in foods which is much more significant.

(c) In many apartments and condominiums, people are not billed for water independently. Considerable uncertainty would arise concerning the means and format of notification to such people by their landlords.

Nine commenters agreed with the proposed direct public notification requirement except that it should only pertain if sodium concentrations were "high" (20 mg/l to 250 mg/l). They thought it would be meaningless and costly to notify the public if sodium levels were low.

While EPA feels that public awareness of the sodium levels in the drinking water is desirable, EPA has carefully evaluated the commenters' concerns and has determined that the most appropriate action to take would be reporting of sodium levels to the EPA and/or the State and to appropriate local and State public health officials; if the State assumed this latter responsibility the supplier would be relieved of this requirement. Physicians could in turn be informed through communications with the public health officials. The public can be informed either through their physicians or by contacting the public health officials, the State, or the water system. The results can also be disseminated by local news media.

Five commenters suggested that the State or EPA rather than the supplier should notify the public and appropriate health officials because of the burden placed upon the supplier.

The deletion of the direct public notification requirement will greatly reduce the requirements imposed upon the supplier. The supplier will now only be required to report to EPA and/or the State and to notify the local and State public health officials of its sodium content in water. In many cases the State will assume this latter responsibility.

Eight commenters stated that the required reporting time for sending sodium results to EPA and/or the State of ten days following receipt of results was too short. Their rationale included (a) inconsistency with the allowed reporting time of three months to public health officials; (b) sodium is not an acute risk and therefore greater time should be allowed for its reportage; and (c) paperwork could be minimized if sodium could be reported with other parameters.

EPA agrees with the commenters and thus has changed the reporting requirements to make sodium consistent with that required for other parameters included in the NIPDWR.

Six commenters thought that the required monitoring frequency was insufficient to determine representative sodium concentrations at many locations; several indicated systems using multiple sources as an example. One commenter suggested basing monitoring frequency on geographical location (e.g. coastal sources having higher requirements than inland sources). Three commenters suggested that the monitoring frequency should be determined by the State or EPA. One commenter suggested that once a site indicated a constant concentration, the monitoring frequency should be lowered.

The minimum monitoring frequency for sodium is consistent with that required for other inorganic contaminants. The regulations provide that those systems expected to have fluctuations in sodium levels can be assigned higher monitoring frequencies by the States or EPA. In addition, EPA feels that since the minimum sampling requirements are not a burden and will provide useful information, and thus, reduced frequencies are not necessary.

Nine commenters were opposed to establishing an MCL for sodium in the Revised Primary Drinking Water Regulations. Most of these alleged that there is currently no cost-effective technology for reducing sodium levels and that many water supplies would thus not be able to comply with such a regulation. Many thought it would be illogical for the consumer to pay for sodium removal in water when basic foods contribute much more significant amounts. Commenters contended that a more cost-effective solution could be achieved if affected people bought bottled water. In addition, several commenters argued that an MCL should not be set because available information is insufficient to implicate health risks with the sodium levels in drinking water. In addition, many commenters thought that an MCL would conflict with corrosion control practices since sodium compounds are often the best treatment for reducing corrosivity. Eight commenters suggested that if an MCL were established it should be higher than EPA's stated goal of 20 mg/l (ranging from 100 to 250 mg/l).

In the proposal, EPA stated that it is studying the feasibility of establishing an MCL rather than stating the intent to establish an MCL, as several commenters interpreted. EPA recognizes that foods contribute most of the sodium in people's diets. However, sodium intake from food can only be restricted to a feasible limit. Where water supplies contain more than 20 mg/l, dietary sodium restriction to less than 500 mg/day, which is sometimes prescribed, is difficult to achieve and maintain. Also, many bottled waters do not list their sodium concentrations. EPA will continue to study the feasibility of setting an MCL for sodium. Treatment techniques such as reverse osmosis, electrodialysis or distillation could remove sodium but the costs are relatively high. Research is being conducted to determine more feasible treatment methods and the possible risks of sodium in drinking water is still being evaluated. If such treatments become available, options other than imposing an MCL would also be considered. EPA's position on health risks and potential conflict with corrosion control is discussed below in responses to other comments.

Eight commenters felt that EPA's stated goal of 20 mg/l for public water systems was

unrealistically low and suggested changing it from 50 to 250 mg/l. Their reasons included a lack of available treatment technology, conflict with the corrosion amendment, and questioning the health risks of sodium levels at 20 mg/l. One commenter felt that the NAS report stated that 100 mg/l should be the generally acceptable upper limit and suggested that the goal be changed to 100 mg/l.

The goal was set at 20 mg/l so that drinking water which meets this goal would not present a sodium-related hazard to those segments of the population thought to be at high risk. These are not only those persons on low sodium diets. Included are infants, women during pregnancy, persons with undiagnosed or untreated hypertension, persons with kidney disease or congestive heart disease and persons in whom an unknown source of excessive sodium could present considerable health risk. With respect to the NAS report (1977), it was stated that, "in many diets allowance is made for water to contain 100 mg/liter of sodium (NAS, 1977, p. 436)." Also, with a desired total sodium intake of 2000 mg/day, the contribution from water (assuming two liters intake per day) containing not more than 100 mg/liter would be 10 percent or less of the daily intake. The desired total intake limit of 2,000 mg/day is considered to be beneficial to at least 40 percent of the total population.

EPA's intent in stating the goal of 20 mg/l was to provide a reference for water utility operators for their consideration when evaluating alternative sources or treatment technologies. For example, in certain cases, it may be possible to select lime addition in lieu of addition of soda ash but the point is that operators should be aware of considerations for addition of less desirable compounds. While sodium levels in alternate sources or resulting from various treatment technologies should be considered, protection of source waters is also desirable. EPA's previously stated goal of 20 mg/l has been rewarded to clarify the above considerations.

Eight commenters thought that the State rather than the water supplier should report sodium levels to EPA, indicating that reporting requirements should be consistent with those for other parameters. Three commenters suggested that the primary agency, rather than EPA, should be notified since it has full authority for implementing the regulation.

The sodium monitoring and reporting requirements have been included as part of the special monitoring requirements allowed for unregulated contaminants as authorized by the Safe Drinking Water Act (Section 1414(c) and 1445). States are not required to adopt the requirements to maintain their primary enforcement responsbility. If the State adopts the regulation, the supplier will report the results to the State rather than to EPA. If the State does not adopt the amendment, the supplier is required to send the results to EPA. States are being encouraged to adopt the regulations in order to minimize the federal role.

Three commenters felt that consideration of the need for low sodium water be on a case-by-case basis and made by a physician who can recommend an appropriate water source for patients.

The Agency concurs with the commenter in that in order for physicians to best advise their patients on their dietary intake, the physicians would need to know the sodium concentration of the drinking water.

Two commenters stated that sodium in water is less than five percent of the daily intake, and controlling the contribution from drinking water would have no effect on the intake of most people.

The NAS (1977) states that 40 percent of the population would benefit from a total sodium ion intake not greater than 2000 mg/day. Water containing more than 50 mg/liter of sodium (not uncommon), assuming a two liter daily consumption, would contribute more than five percent of the daily sodium intake to the population abiding by such a diet. In addition, three percent of the population is on sodium-restricted diets.

Two commenters stated that acculturation, or life stresses, not sodium, are most associated with differences in blood pressure and hypertension, when comparing unacculturated with acculturated groups of people.

Contrary to the commenters' statements, the NAS found that increased sodium intake was most consistently associated with increases in blood pressure, more than the level of acculturation, in studies of unacculturated versus acculturated groups (NAS, 1977). EPA does not imply that sodium is the sole etiologic agent in the development of hypertension. However, increasing evidence supports that excesses of sodium intake are implicated as one important factor in the development of high blood pressure in susceptible people. There may be several important factors which interact to produce clincial hypertension, including inherited susceptibility, excessive sodium intake, psycho/socio/cultural stress factors, and other as yet unknown factors.

One commenter noted that the FDA Committee on GRAS (Generally Recognized as Safe) substances is reviewing sodium and EPA should wait for that review to be completed.

EPA believes sufficient evidence currently exists to implicate excess sodium as a health risk for some individuals and that the monitoring are thereby appropriate.

One commenter stated that public notification could promote self-imposed sodium restricted diets which can be dangerous. Another commenter stated that sodium is a necessary nutrient and that it cannot be considered undesirable in the normal diet.

EPA recognizes that sodium is a nutrient but most Americans consume sodium greatly in excess of that amount needed for good nutrition. Evidence for this is provided in the NAS report "Drinking Water and Health (1977)." The minimum daily requirements for sodium are so low (2.3 mg Na/100 kilocalories (K cal) food for normal adults—see American Academy of Pediatrics, Vol. 53, No. 1, January 1974, pg. 115) that it is virtually impossible to restrict one's diet to below the normal daily requirement. According to the NAS, it is difficult to constrict one's diet to less than 460 mg of sodium per day which is about 5 times the minimum daily requirement (considering a daily intake of 4000 K cal). Normal daily intake for most consumers is in the 5–10 grams/day. The amendment allows for people to be informed of the sodium levels in their drinking water and thus help regulate their sodium intake.

One commenter questioned the validity of EPA relating animals studies to humans to support the sodium monitoring requirements. The commenter felt that it was inappropriate for EPA to prefer to a study in the Statement of Basis and Purpose which indicated that a high sodium intake in genetically susceptible rats causes hypertension, and which also indicated that when hypertension becomes established in these rats it is not corrected by reducing sodium intake.

It is generally accepted among scientists that health risks associated with effects of chemical intake in animals, when properly qualified, are applicable to man (NAS, 1977). A number of animal species respond similarly to humans in particular pathological states but certainly *not all* as is the case with the study cited. There are no animals which can represent man as a perfect model. The clincial and epidemiologic evidence presented in the Statement of Basis and Purpose, support the animal studies cited, which suggest that excess sodium intake contributes to hypertension in humans.

One commenter suggested that the use of home water softeners and the subsequent introduction of sodium should be evaluated for their health significance.

EPA acknowledges that more information is needed on the sodium concentration of waters softened by units in the home and the health significance of softening water at home. EPA is currently sponsoring such a study. Limited information is available in the Statement of Basis and Purpose.

Three commenters stated that there is no evidence that sodium in drinking water presents a risk to the healthy consumer; two of these stated that the only risk is to persons on sodium restricted diets (less than 500 mg/day).

There is some evidence from epidemiologic studies that higher concentrations of sodium in drinking water may be associated with higher blood pressure in school children when compared with children of similar age in a community with lower sodium in its drinking water supply. The higher blood pressures may continue to be higher than those of other persons of the same age through life and result in clinical hypertension. In addition, infants, children and women during pregnancy are considered healthy consumers and may be more sensitive to risk from excesses of sodium (NAS 1977).

Four commenters questioned the significance of sodium intake in cardiovascular disease, particularly hypertension. Specifically, commenters stated the following: the proposed amendment was not supported by clear evidence of a health concern or risk; there have been no cases of low sodium intake preventing hypertension or high intake definitely causing it; there is insufficient evidence to demonstrate a causal connection between sodium and hypertension; sodium is one of many influences in hypertension; the epidemiologic studies fail to support the

hypothesis that salt consumption is a major factor in hypertension; and reducing dietary sodium is not an appropriate treatment for hypertension according to the medical literature. Finally, it was stated that mortality rates from cardiovascular disease were lower in areas with high water mineralization, high hardness, and high sodium, and were higher in areas with low sodium.

Evidence that sodium in excess of optimal concentrations contributes to the development of hypertension is a result of clinical studies, epidemiologic studies, and animal experiments. Cases of low sodium intake found in pre-industrial societies have been associated with not only a relative absence of hypertension, but with no age-related increase in blood pressure. EPA agrees that sodium is not the *sole* causal agent in the development of hypertension, and its role in contributing to hypertension is controversial. Evidence supports sodium as one important factor in the development of higher blood pressure in susceptible individuals. It is also a contributing factor in the exacerbation of many other conditions.

Thus, the evidence supports monitoring to determine the sodium content of drinking water for the purpose of providing information which can be vital to the health of the consumer. The Statement of Basis and Purpose has been revised to include additional information in reference to the commenters' concerns. Additional evidence presented by the NAS (1977) is summarized and evidence from more recent studies have been incorporated into the revised Statement of Basis and Purpose.

One commenter suggested that the minimum required sampling frequency of three years should apply to systems using surface as well as groundwater sources; another preferred one year to apply for both source types.

EPA believes surface waters are more likely to have higher variability in sodium concentrations than groundwaters and a higher monitoring frequency is thus warranted.

One commenter suggested basing the required monitoring frequency on population, similar to the microbiological (coliform) monitoring requirement.

Coliforms indicate potential pathogens in water, an acute health risk. The potential for contamination to a raw water tends to increase as population density increases. High levels of sodium in water is a chronic rather than an acute health concern. Many locations serving large populations will be able to provide representative sodium concentrations with annual or once every three year sampling frequencies depending upon the source of water.

Two commenters thought that more than 18 months should be allowed for implementing the sodium monitoring requirements; however, another commenter suggested that since no treatment modifications would be needed to meet an MCL, the effective date for meeting the requirements should be decreased to two months following promulgation.

EPA is strongly urging the States to adopt these requirements to minimize the federal enforcement role in primacy States. EPA believes that 18 months should provide sufficient time for States to adopt these requirements and thus, the effective date of the regulations is 18 months following promulgation. All systems must complete the first round of sodium monitoring and reporting requirements within 12 months following the effective date.

Several commenters expressed a need for specifying the sampling point to prevent non-representative data; for example, this could occur at points preceded by a home softening unit.

EPA recognizes that representative samples are essential; thus, the sodium monitoring requirements state that representative samples of the distribution system should be taken. States are encouraged to work cooperatively with the public water systems in selecting representative sampling locations. The amendment has thus not been changed.

Two commenters thought that EPA underestimated the cost impact of the proposed sodium amendment on water suppliers. They indicated that EPA had not included notification costs and that the single sample cost of $5/sample was too low.

The direct public notification requirement has been deleted and costs for notifying the appropriate health agencies and officials should be negligible. The utility should not undergo any additional field sampling cost since sodium can be monitored in conjunction with other inorganic chemicals as required by the NIPDWR. Recent estimates by commercial laboratories range from $5 to $15 per sodium analysis and the economic analysis has been revised based upon $10 per sample.

One commenter stated that the requirements regarding public notification and reporting of data to the State or EPA was unclear.

EPA believes that the amendment has been stated clearly and succinctly. Many commenters have not understood that States are not required to adopt the amendment. This led to some confusion and criticism in the wording of the reporting requirements in the proposed amendment. Under the SDWA, States are only required to comply with an MCL or a treatment technique requirement, neither of which EPA believes to be currently appropriate for sodium.

One commenter considered Section 141.41(c) to be redundant to Section 141.41(b) regarding the notification requirement to EPA and/or the State.

Section 141.41(b) requires the supplier to report the results to EPA and/or the State. Section 141.41(c) requires the supplier to notify local and State public health agencies of the sodium levels in water and to send a copy of such notice to EPA or the State. The purpose of Section (c) is to ensure that the local and State public health agencies are notified. The regulations provide that notification of the public health officials by the public water system can be waived by the State if the State provides this notification.

One commenter alleged that the amendment does not comply with Section 1401 in the Safe Drinking Water Act for primary drinking water regulations which requires either an MCL or treatment technique.

The amendment is not a primary drinking water regulation. The amendment is authorized under Section 1414(c) and 1445 of the SDWA.

One commenter indicated that if more than annual sampling is required notification should not be mandatory until a representative average concentration is determined.

A provision has been added such that an average value per compliance period can be reported either to EPA or to the State.

One commenter alleged that the atomic absorption graphite furnace technique is subject to appreciable error and needs to be further investigated.

The method has been carefully evaluated by EPA and has been included as an approved method with specific limitations on the concentration levels of sodium to be analyzed.

One commenter questioned EPA's legal right to request monitoring for sodium suggesting that sufficient data are already available from health agencies to inform the public and that more monitoring is not necessary to evaluate the health risk.

These monitoring requirements are intended to provide information on sodium levels in drinking water so that physicians may take this information into consideration. Many water supplies are currently not monitoring for sodium, nor have they conducted monitoring previously.

Non-Community Water Supply Systems

141.11 Maximum Contaminant Levels for Inorganic Chemicals—Nitrates

Twenty commenters indicated various concerns regarding the amendment to the non-community nitrite MCL. Two of the commenters expressed their support for allowing the non-community nitrate MCL of 10 mg/l to be exceeded under certain circumstances up to 20 mg/l. On the other hand, two other commenters felt that this provision would be unwise since there is no guarantee that children under six months of age would not be exposed to this water.

As discussed in the preamble, the conditions for exceeding the non-community nitrate MCL are being established in recognition of the fact that certain non-community systems, such as industrial facilities, normally provide water only for adult populations. The specific conditions were established to provide a measure of safety that water would not be available to infants. As a final safeguard, the maximum level of 20 mg/l was set because the occurrence of methemoglobinemia in infants increases rapidly at nitrate levels above 20 mg/l. Finally, use of this amendment is not automatic in that States are expected to make case-by-case determinations based upon an evaluation of all pertinent factors. Thus, the Agency feels that the amendment is appropriate and provides adequate safeguards.

Two commenters recommended that the conditions for allowing the nitrate levels up to 20 mg/l for non-community water supply systems to exceed 10 mg/l should be established by the States rather than be mandated by EPA.

This amendment will provide additional latitude to States in regard to implementing the nitrate MCL for noncommunity systems. It is expected that States will evaluate all appropriate factors for each public water system including the conditions set forth in the regulations before making a determination. While conditions have been appropriately set by EPA for implementation of the nitrate MCL, States can establish other conditions provided they are not less stringent than the conditions established by EPA.

One of the commenters suggested that the public notice posted should include information about the availability of alternative water supplies with nitrate levels below 10 mg/l.

The SDWA does not provide for EPA to require the inclusion of information regarding the availability of alternative water supplies in a public notice; however, the Agency recognizes this as a desirable practice, and therefore, the States should encourage the water suppliers to include this kind of information in the notices.

Another commenter felt that continuous posting of the public notice was unnecessary.

Because of the transient nature of the population using the water supply, only continuous posting of the fact that nitrate levels exceed 10 mg/l would assure that water is not consumed by sensitive populations.

Two commenters noted that the requirement to notify local physicians is unnecessary. One reasoned that local physicians would not see the patients affected by the nitrates while the other felt that notification of local physicians would be burdensome in large metropolitan areas. An additional commenter suggested that the Agency provide a better definition for the term "local physician."

These concerns have been carefully reviewed and it has been determined that the most effective method of notifying physicians would be through the local and State public health agency. Thus, the amendment has been changed such that public water systems must notify local and State public health authorities. Local health authorities are encouraged to notify local physicians since consumption of water by infants with high concentrations of nitrates for as short a period as a day may result in the occurrence of methemoglobinemia. This information will facilitate rapid diagnosis and treatment for patients in case they are affected.

One commenter recommended that this amendment should also apply to small community water supply systems.

The Agency has carefully evaluated the merits of this recommendation and in recognition that the risks of methemoglobinemia predominate in children under six months of age, amendments to the existing regulations will be proposed in a separate rulemaking that would extend this amendment to community water systems that do not include children in this age group.

One commenter felt that nitrate levels up to 50 mg/l should be allowed for non-community systems.

Methemoglobinemia has been shown to occur in populations consuming water having nitrate levels ranging between 10 and 20 mg/l. However, with levels of nitrate exceeding 20 mg/l, the incidence of methemoglobinemia rapidly increases. In addition, recent data has suggested relationships between gastrointestinal cancer and nitrates and thus, a maximum level for nitrates is appropriate.

Ten of the commenters suggested that the absence of nitrite in the water as a condition of relaxing the nitrate level should be deleted. One of the reasons cited was that the analytical test for nitrites is extremely sensitive and in most cases where nitrates exceeded 10 mg/l, nitrites would be measurable; thus, this requirement could rarely, if ever, be met by the non-community water system. Other commenters noted and suggested that a "realistic" nitrite limit be one mg/l. An alternative suggested was that nitrites be limited to the detection limit of available and approved analytical techniques; others noted that the Agency has not established an MCL for nitrite, and, therefore, in applying this condition, EPA is essentially setting an MCL without due process.

As pointed out by the commenters, the nitrate analytical method is sensitive. Nitrite in drinking water can be determined by the colorimetric method listed as Method 354.1 in "Methods for Chemical Analysis of Water and Wastes," EMSL, EPA, 1979, or Method 420 in "Standard Methods for the Examination of Water and Wastewater," 14th Edition, APHA, AWWA, WPCF, 1975. The spectrophotometric version of this method is capable of detecting nitrite concentrations below 0.01 mg/l, while visual comparisons may be somewhat less sensitive.

The health effects of nitrite is the same as nitrate, except that the direct ingestion of nitrite would have a more immediate and direct effect on the infant because the bacterial conversion step in the stomach would be eliminated. Nitrite, however, rarely occurs in drinking water at significant concentrations, since it is usually oxidized to nitrate. When it does occur, it is usually the result of gross contamination by sewage. In such cases the water would be unacceptable for use and would not meet the coliform standard. Deletion of the nitrite requirement is appropriate because of the safeguards which the supplier must meet before becoming eligible to exceed the 10 mg/l. These include that only infants under 6 months of age will not have access to the water, continuous posting of the fact that nitrate levels exceed 10 mg/l and local physicians being so notified, and that no adverse health effects shall result. However, since it is expected that States will make a judgment regarding applicability of this amendment on a case-by-case basis based upon considerations of all relevant factors, including the level of nitrites. In general, levels of nitrite should not exceed one mg/l.

Four of the commenters recommended that the statement "no adverse health effect will result" as a condition for allowing the nitrate level for non-community water supply systems to exceed 10 mg/l be either defined or deleted.

No adverse health effects would result if the water system is in compliance with the other conditions set forth in this amendment. The condition has been retained as the final safeguard in that it is left as general guidance as a contingency if the other conditions are not met.

141.21(c) Microbiological Contaminant Sampling and Analytical Requirements

The agency received eight comments regarding microbiological contaminant sampling and analytical requirements. Five commenters supported this amendment. Of the three commenters objecting, one felt that non-community water systems should not be allowed to reduce coliform monitoring unless a recent (i.e. past year) coliform sampling indicated the system to be in compliance with the NIPDWR. The other two commenters opposed this amendment on the basis that the existing quarterly sampling requirement for non-community systems already provides only minimal information about the microbiological quality of the water, thus, sampling beyond quarterly intervals is not sufficient. One of these commenters suggested increasing the frequency of the microbiological monitoring for non-community water supply systems rather than decreasing it.

The amendment allows the States to exercise their discretion on a case-by-case basis to reduce or increase the sampling frequency for microbiological contaminants. The decision of the State would be based upon the existence of historical data regarding the bacteriological quality of water and the results of sanitary surveys. Thus, the concerns of the commenters will be taken into account by the State in evaluating each system's requirements on a case-by-case basis; therefore, no change to the amendment is necessary.

141.22 Turbidity Sampling and Analytical Requirements

A total of nineteen comments were received regarding this amendment. Five of the commenters supported this amendment. Three additional commenters endorsed the amendment; however, they felt that the administrative requirements associated with the reduction of the turbidity monitoring requirement would impose an additional burden to the State.

This amendment authorizes the States to use their discretion to reduce turbidity monitoring for non-community surface water supplies where the State determines that no unreasonable health risk exists. It is expected that States would evaluate all appropriate factors on a case-by-case basis to determine the appropriate monitoring frequency. This may result in an additional burden but in general the provision allows latitude and will be implemented as resources permit.

Two commenters that supported this amendment also stated the following: one recommended the filtration of all surface water sources, while the other noted that reduction of the turbidity monitoring frequency used should be contingent upon filtration and disinfection of the water.

Because of the vulnerability of surface waters to contamination from both microbiological and particulate matter, the Agency believes that surface water systems should rely on the installation and operation

of appropriate water treatment, including coagulation, sedimentation, filtration and disinfection to protect the public health from contamination of drinking water sources.

Although this amendment allows latitude in the monitoring frequency for turbidity specifically for non-community water systems, reducing the monitoring frequency will only be permitted where disinfection is practiced, and where a disinfectant residual is maintained in the distribution system.

One commenter supporting this amendment recommended the establishment of additional MCLs based upon the materials making up turbidity, such as clays or colloids.

Because of the numerous sources of turbidity, analytical procedures determining each individual type of materials contributing to the turbidity would be tedious and expensive. EPA feels the turbidity MCL adequately covers this concern.

Two commenters dealt with the Interstate Carrier Water Systems (ICWS). One of these commenters objected to the requirement for measuring turbidity in ICWS, while the other felt that the language of the amendment should be changed to allow EPA in addition to a State to reduce turbidity monitoring requirements for ICWS.

Regarding turbidity sampling in ICWS, the Agency is currently examining policy and guidance in this matter.

However, until a resolution is reached, the regulations will continue to be applicable to them. In instances where the State is not granted primacy, EPA will exercise authority to evaluate turbidity monitoring requirements for ICWS where appropriate.

Five comments from State agencies expressed their opposition to this amendment. These commenters felt that the turbidity monitoring requirements for non-community systems should not be reduced since both consumers in community and non-community are similarly susceptible to risks of improperly treated drinking water. It was also pointed out that in addition to health considerations, turbidity monitoring is an important value in monitoring treatment plant performance. Other commenters felt that turbidity monitoring for non-community systems should be as stringent as for community systems due to poor water sources, fluctuation in water quality and demand and the likelihood of less qualified supervision and management.

This amendment applies only to systems that practice disinfection and maintain an active disinfectant residual. In addition, it is expected that States will evaluate all other appropriate factors in making the determination. Thus, the Agency feels that adequate safeguards to protect the consumer's health have been provided. In instances where the State determines that reduction of the turbidity monitoring frequency would jeopardize the population at risk due to poor water sources, fluctuation in water quality or poor management and water treatment performance, the State has the authority not to reduce the turbidity monitoring frequency; if it is found necessary the State upon its discretion may require the water supplier to increase turbidity monitoring requirements.

The monitoring frequency determined by the State should reflect anticipated situations where turbidity may be elevated. In making this determination, States should perform a sanitary survey, as well as consider whether the area served by the public water system has a history of waterborne disease and whether the system and raw water source of the system is protected from significant microbiological contamination.

Two other commenters recommended that reduction of the turbidity monitoring frequency should be extended to small community water systems.

The Agency feels that extending the option of reduced turbidity monitoring for small surface community supplies is not appropriate due to the non-transient nature of the population.

141.23 Inorganic Sampling and Analytical Requirements

Two comments were received regarding the extension of the sampling date for nitrate. One of these commenters supported the extension of the sampling date by one year while the other felt that the additional time allotted is not sufficient to allow for the recruitment of personnel to comply with the amendment. This commenter recommended that the sampling date for nitrates be extended to June 1982.

The date has been extended to December 24, 1980, which is an additional six months beyond the one year extension contained in the proposal. The Agency feels that an 18 month extension provided for nitrate sampling is sufficient considering the total time made available between the promulgation of the NIPDWR in December 1975 and the final date of December 1980.

141.32 Public Notification

Seven comments were received regarding public notification for non-community water supply systems. One of the commenters supported the amendment without any reservations. Another commenter felt that non-community systems should not be required to post notices for variances and exemptions or of failures to meet variance and exemption schedules. The commenter noted that by granting a variance or exemption, the regulatory agency has made a judgment that there is no unreasonable risk to health under the conditions that exist for that water supply, thus posting such notice would cause confusion rather than serve any useful purpose.

Section 1414(c) of the Safe Drinking Water Act (SDWA) requires that a public water supply system give notice to persons served by it if it is subject to an exemption or variance. Although the SDWA requires that such notice be given not less than once every 3 months, the Agency feels that only by continuous notification would the transient users be informed about the existence of variances and exemptions.

Two commenters suggested that if a non-community system fails to meet an applicable MCL, it should be closed, and until the problem is corrected water should be provided to the public from an alternate source.

Any violation of an MCL creates some risk to the public health. However, the SDWA authorizes the granting of variances or exemptions if there is no unreasonable risk to health. Closure of a water supply system is required only in instances where the consumption of the water poses an imminent danger to health. By law, no variance or exemption would be granted to such a water supply system.

One commenter recommended that the posted notice should include a description of the availability of an alternate source of safe water.

There is no provision in the SDWA to include in the public notice information about the location of alternate water supplies. However, such information may be included at the discretion of the State or the supplier. The Agency encourages this practice as well as the provision of water from an alternate water source to the public, if feasible, until the deficiencies are corrected at the existing water supply.

One of the commenters suggested that notification of the public should not be continuous but rather limited to the period during which deficiencies in the water quality exist.

The amendment limits the duration of posting of compliance failures to the violation period by stating that ". . . the supplier of the water shall give notice by continuous posting . . . as long as the failure . . . continues."

One commenter opposed that public notification should be limited to the duration of the variance granted to the non-community water supply.

The amendment also includes a requirement for the continuous posting of violations of the NIPDWR as long as they continue.

Appendix B—Measurement of Corrosivity Related Parameters

The pH at which a water is just saturated with calcium carbonate is known as the pH of saturation, or pH_s. The Langelier saturation index [1] is defined as the actual pH minus pH_s. A negative index indicates a tendency to dissolve calcium carbonate and a positive index indicates a tendency to deposit calcium carbonate. This index is not related directly to corrosion, but deposition of a thin, coherent scale may be protective. Thus a slight positive index is frequently associated with non-corrosive conditions, whereas a negative index indicates the possibility of corrosion.

To calculate the saturation index, it is necessary to determine the methyl orange alkalinity, calcium ion concentration, pH, temperature, and total filtrable residue.

1. Calculation. The value of pH_s can be calculated, with good precision, by using the equilibrium expressions for the solution of calcium carbonate and the second hydrolysis of carbonic acid:

$$CaCO_3(s) \rightleftarrows Ca^{2+} + CO_3^{2-}$$

$$K_s = (Ca^{2+})(CO_3^{2-}) \quad (1)$$

$$HCO_3^- \rightleftarrows H^+ + CO_3^{2-}$$

$$K_2 = \frac{(H^+)(CO_3^{2-})}{(HCO_3^-)} \quad (2)$$

Dividing Equation 1 by Equation 2 and rearranging gives:

$$(H^+) = \frac{K_2}{K_s}(Ca^{2+})(HCO_3^-) \quad (3a)$$

or

$$pH_s = p(Ca^{2+}) + p(HCO_3^-) + p(K_2/K_s) \quad (3b)$$

Values of conditional equilibrium constants may be obtained from the literature.[2-5]

Accounting for the effect of temperature and ionic strength on the equilibium constants, Larson [5] formulated the expression for the pH at calcium carbonate saturation, pH_s, as:

$$pH_s = A + B - \log(Ca^{2+}) - \log(\text{alkalinity}) \quad (4a)$$

where calcium ion concentration and alkalinity are expressed mg/l as $CaCO_3$. Values for the constants and logarithms in Equation 4a are given in Tables 203:I through III. This method of calculation is adequate for waters having a pH_s of 9.3 or less. Above pH_s 9.3, the bicarbonate alkalinity must be used rather than total alkalinity. This can be determined with a nomograph such as that reported by Dye [6].

Table 203:I.—*Constant A as Function of Water Temperature*

Water temperature C	A [1]
0	2.60
4	2.50
[illegible]	2.40
12	2.30
16	2.20
[illegible]	2.10
25	2.00
30	1.90
40	1.70
[illegible]	1.55
60	1.40
70	1.25
80	1.15

[1] Calculated from K_s as reported by Harned and Scholes [7] and K_2 as reported by Larson and Buswell.[3] Values above 40C involve extrapolation.

Table 203:II.—*Constant B as Function of Total Filtrable Residue*

Total filtrable reside mg/l	B
0	9.70
100	9.77
200	[illegible]
400	[illegible]
800	[illegible]
1,000	[illegible]

Table 203:III.—*Logarithms of Calcium Ion and Alkalinity Concentrations*

Ca^{2+} or alkalinity mg/l $CaCO_3$	Log
10	1.00
20	1.30
[illegible]	1.48
[illegible]	1.60
50	1.70
60	1.78
70	1.84
[illegible]	1.90
100	2.00
[illegible]	2.30
[illegible]	2.48
[illegible]	[illegible]
500	2.70
[illegible]	2.78
[illegible]	[illegible]
[illegible]	[illegible]
900	2.95
1,000	3.00

For example, for a water having a calcium ion concentration of 200 mg/l as $CaCO_3$, an alkalinity of 60 mg/l as $CaCO_3$, a temperature of 16 C, and a total filtrable residue of 650 mg/l, this equation is solved:

$$pH_s = 2.20 + 9.88 - 2.30 - 1.78 = 8.00 \quad (4b)$$

If the measured pH of this water is 9.0, the saturation index is 9.0−8.0 or +1.0, and the water is supersaturated with respect to calcium carbonate.

The pH_s value of 8.0 means that the water will neither dissolve nor precipitate calcium carbonate at that pH. While it does not indicate specifically anything about the corrosion of any metal in contact with the water, it is widely assumed that maintaining the water pH above the pH_s will result in the deposition of a protective coating of calcium carbonate on distribution system piping. Frequently, this does not occur because of non-uniform deposition or sloughing of materials from pipe walls. The formation of protective calcium carbonate coatings may be inhibited further by the application of polyphosphates as sequestering agents to the finished water.

Additional aids for the calculation of the saturation index are available.[8-13] Particularly useful is the Caldwell-Lawrence diagram,[13] which facilitates estimation of chemical dosages for softening as well as equilibrium conditions.

The pH of saturation with respect to calcium carbonate frequently has been estimated experimentally by equilibrating chips of calcium carbonate with a given water (marble test). This test suffers from the facts that equilibrium may not be attained and the partial pressure of carbon dioxide in the atmosphere over the sample may influence the results adversely.

Another useful measure of calcium carbonate saturation is the driving force index, or DFI, which was defined by McCauley [14] as:

$DFI = (Ca^{2+}) \times (CO_3^{=})/K_s \times 10^{10}$

Both calcium and carbonate concentrations are expressed as mg/l as $CaCO_3$.

The DFI is easily calculated from the saturation index as follows:

$DFI = 10^{(SI)}$

This value is not a logarithm but a simple ratio of the existing ion product to that which would exist at equilibrium. A value of 1.0 indicates equilibrium, values above 1.0 indicate the possibility of calcium carbonate deposition and values below 1.0 indicate a tendency to dissolve calcium carbonate and possible corrosion.

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[1] **Note:** Between 45 FR 55433 and 55465, August 20, 1980, there were several pagination errors. Please refer to the cover of the issue for Thursday, August 21, 1980, for explanation.

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AGENCY PUBLICATION ON ASSIGNED DAYS OF THE WEEK

The following agencies have agreed to publish all documents on two assigned days of the week (Monday/Thursday or Tuesday/Friday). This is a voluntary program. (See OFR NOTICE 41 FR 32914, August 6, 1976.)

Monday	Tuesday	Wednesday	Thursday	Friday
DOT/SECRETARY	USDA/ASCS		DOT/SECRETARY	USDA/ASCS
DOT/COAST GUARD	USDA/APHIS*		DOT/COAST GUARD	USDA/APHIS*
DOT/FAA	USDA/FNS		DOT/FAA	USDA/FNS
DOT/FHWA	USDA/FSQS		DOT/FHWA	USDA/FSQS
DOT/FRA	USDA/REA		DOT/FRA	USDA/REA
DOT/NHTSA	MSPB/OPM		DOT/NHTSA	MSPB/OPM
DOT/RSPA	LABOR		DOT/RSPA	LABOR
DOT/SLSDC	HHS/FDA		DOT/SLSDC	HHS/FDA
DOT/UMTA			DOT/UMTA	
CSA			CSA	

Documents normally scheduled for publication on a day that will be a Federal holiday will be published the next work day following the holiday. Comments on this program are still invited. Comments should be submitted to the Day-of-the-Week Program Coordinator, Office of the Federal Register, National Archives and Records Service, General Services Administration, Washington, D.C. 20408.

***NOTE: As of September 2, 1980, documents from the Animal and Plant Health Inspection Service, Department of Agriculture, will no longer be assigned to the Tuesday/Friday publication schedule.**

REMINDERS

The "reminders" below identify documents that appeared in issue of the **Federal Register** 15 days or more ago. Inclusion or exclusion from this list has no legal significance.

Rules Going Into Effect Today

COMMERCE DEPARTMENT

National Oceanic and Atmospheric Administration—

52810 8–8–80 / Atlantic herring fishery

TRANSPORTATION DEPARTMENT

Federal Aviation Administration—

49913 7–28–80 / Procedure for compensating air carriers who have incurred unreimbursed costs for screening passengers, and their carry-on baggage moving in foreign air transportation

Deadlines for Comments On Proposed Rules for the Week of August 31 through September 6, 1980

AGRICULTURE DEPARTMENT

Commodity Credit Corporation—

52342 8–6–80 / CCC Intermediate Credit Export Sales Program for Foreign Market Development Facilities; comments by 9–5–80

Farmers Home Administration—

51818 8–5–80 / Biomass energy and alcohol fuels loans and guarantees; comments by 9–4–80

Federal Corp. Insurance Corporation—

44305 7–1–80 / Procedures for insuring Florida citrus effective with 1981 crop year; comments by 9–2–80

44311 7–1–80 / Procedures for insuring citrus in Texas effective with the 1981 crop year; comments by 9–2–80

CIVIL AERONAUTICS BOARD

52820 8–8–80 / Actual notice to passengers about the terms of the contract of carriage, airlines requirement; comments by 9–3–80

42317 6–24–80 / Simplification of regulations for airline ticket and ticket counter notices to passengers; reply comments by 9–1–80

[*See also* 45 FR 25817, 4–16–80]

COMMERCE DEPARTMENT

International Trade Administration—

45891 7–8–80 / Processing export license applications; procedures and time limits; comments by 9–2–80

45894 7–8–80 / Qualified general license; comments by 9–2–80

National Oceanic and Atmospheric Administration—

49953 7–28–80 / Deep seabed mining advance notice of proposed rulemaking for the mining of deep seabed minerals; comments by 8–31–80

EDUCATION DEPARTMENT

45130 7–2–80 / Guaranteed Student Loan Program; refund of tuition charge and other fees; comments by 9–2–80

ENERGY DEPARTMENT

49586 7–25–80 / Outer Continental Shelf Oil and gas leasing, development of a bidding system with a work commitment component; comments by 9–5–80

Economic Regulatory Administration—

51833 8–5–80 / Reports on major electric utility system emergencies; comments by 9–5–80

ENVIRONMENTAL PROTECTION AGENCY

50825 7–31–80 / Air quality implementation plans; Illinois; comments by 9–2–80

50832 7–31–80 / Air quality implementation plans; New York; comments by 9–2–80

51619 8–4–80 / Availability of implementation plan revision for the state of Oregon; comments by 9–3–80

44970 7–20–80 / California plan to control floride emissions from existing phosphate fertilizer plants; comments by 9–2–80

45322 7–3–80 / Electroplating point source category effluent guidelines and standards pretreatment standards for existing sources; comments by 9–2–80

51854 8–5–80 / Nuclear polhedrosis virus of *Heliothis Zea*; proposed exemption from the requirement of a tolerance; comments by 9–4–80

52185 8–6–80 / Textile mills point source category effluent limitations guidelines; pretreatment standards, and new source performance standards; comments by 9–5–80

FEDERAL COMMUNICATIONS COMMISSION

42725 6–25–80 / FM broadcast station in Lake Havasu, Ariz.; changes in table of assignments; reply comments by 9–2–80

45600 7–7–80 / Permission for use of alternative procedures in choosing applicants for radio authorization in the multipoint distribution service; reply comments period extended to 9–5–80

[*See also* 45 FR 29335, 5–2–80]

47885 7–17–80 / Scope and coverage of restrictions on employee financial interests; reply comments by 9–2–80

45601 7–7–80 / Technical requirements applicable to the multipoint distribution service, the instructional television fixed service and the private operational-fixed microwave service; comment period extended to 9–2–80

[*See also* 45 FR 29350, 5–2–80]

51251 8–1–80 / Verification and methods of measurement of computing devices; comments extended to 9–2–80

[*See also* 45 FR 42347, 6–24–80]

FEDERAL EMERGENCY MANAGEMENT AGENCY

50282 7–28–80 / Acquisition of flood damaged structures (interim rule); comments by 9–1–80

51426 8–1–80 / Proposed notice of rules exempting systems of records from certain requirements of the Privacy Act of 1974 and proposed section to FEMA Privacy Act regulations covering exemptions under the Privacy Act of 1974; comments by 9–2–80

49960 7–28–80 / Statewide FAIR Plans; Depopulation Program; comments by 9–1–80

FEDERAL HOME LOAN BANK BOARD

46431 7–10–80 / NOW accounts; comments by 9–3–80

FEDERAL TRADE COMMISSION

44317 7–1–80 / American Art Clay Co., Inc.; Consent agreement with analysis to aid public comment; comments by 9–2–80

[Corrected at 45 FR 49589, 7–25–80]

51218 8–1–80 / Reasonable duties under a full warranty; comments extended to 9–2–80

[*See also* 45 FR 37386, 6–2–80]

44324 7–1–80 / Totes Inc.; consent agreement with analysis to aid public comments; comments by 9–2–80

HEALTH AND HUMAN SERVICES DEPARTMENT

Disease Control Center—

47878 7–17–80 / Grants for preventative health services; comments by 9–2–80

Food and Drug Administration—

51184 8–1–80 / Ethylene-Vinyl acetate-carbon monoxide polymer, safe use as a component of adhesives in articles for food-contact use; objections by 9–2–80

51766 8–5–80 / Food additives for human consumption; Sodium Stearoyl—2—Lactylate; objections by 9–6–80

51767 8–5–80 / Indirect food additives; 1,3,5-Triethyl-hexahydro-1,3,5-Triazine; objections by 9–4–80

30002 5–6–80 / Ophthalmic Drug Products for Over-the-Counter Human Use; Establishment of a Monograph; reply comments by 9–3–80

Public Health Services—

48507 7–18–80 / Grants for Community Mental Health Centers; Provisional nature of amounts of initial operation and staffing, conversion, and financial distress, grants; comments by 9–2–80

INTERIOR DEPARTMENT

Fish and Wildlife Service—

31446 5–13–80 / Endangered and threatened wildlife and plants; review of status of nine Antich, California, insect species; comments by 9–1–80

Surface Mining Reclamation and Enforcement Office—

54372 8–15–80 / Pennsylvania permanent regulatory program: comments by 9–2–80

[*See also* 45 FR 54372, 7–11–80]

51240 8–1–80 / Surface Coal Mining and reclamation operations: Permanent regulatory program; Proposed interpretive rules; comments by 9–2–80

INTERSTATE COMMERCE COMMISSION

45545 7–3–80 / Acceptable forms of requests for operating authority (motor carriers and brokers of property); comments by 9–2–80

52186 8–6–80 / Recordation of documents; comments by 9–5–80

51213 8–1–80 / Rules governing applications filed by motor carriers; comments extended to 9–2–80

[Originally published at 45 FR 45534, 7–3–80 and corrected at 45 FR 49082, 7–23–80]

51213 8–1–80 / Rules governing applications for operating authority; comments extended to 9–2–80

[Originally published at 45 FR 45534, 7–3–80]

JUSTICE DEPARTMENT

Attorney General—

52183 8–6–80 / Privacy Act; exemption of records systems: comments by 9–5–80

Parole Commission—

44966 7–2–80 / Appellate hearings; oval representation; comments by 9–2–80

NATIONAL CREDIT UNION ADMINISTRATION

47846 7–17–80 / Federally insured state chartered credit unions; Federal credit union share accounts, share certificate accounts; and share draft accounts; comments by 9–1–80

NUCLEAR REGULATORY COMMISSION

45302 7–2–80 / Standards for protection against radiation; miscellaneous clarifying amendments; comments by 9–2–80

NUCLEAR SAFETY OVERSIGHT COMMITTEE

50772 7–31–80 / Privacy Act of 1974; regulations for implementation; comments by 9–2–80

PERSONNEL MANAGEMENT OFFICE

44304 7–1–80 / Reduction in force; competitive level placement, retention register, length of service, etc.; comments by 9–2–80

51214 8–1–80 / Removal, reinstatement, and guaranteed placement in the Senior Executive Service; comments by 9–2–80

POSTAL SERVICE

51846 8–5–80 / Address cards arranged in sequence of carrier delivery; comments by 9–4–80

SECURITIES AND EXCHANGE COMMISSION

49954 7–28–80 / Electric utility companies; acquisition of voting securities of electric generation or transmission companies; exemption; comments by 9–2–80

47159 7–14–80 / Short Selling by market makers; modification of Rule 10a–1; comments by 8–31–80

TRANSPORTATION DEPARTMENT

Coast Guard—

43226 6–26–80 / Drawbridge operation regulations; standards opening and acknowledging signals; comments by 9–1–80

48662 7–21–80 / Establishment of a special anchorage area at Apollo Beach, Fla.; comments by 9–4–80

48058 7–17–80 / Safety rules for self-propelled vessels carrying hazardous liquids; comments by 9–2–80

TREASURY DEPARTMENT

Internal Revenue Service—

44965 7–2–80 / Tax-force sales of articles to be used for, or resold for further manufacture; comments by 8–31–80

WAGE AND PRICE STABILITY COUNCIL

51541 8–4–80 / Amendment of procedural rules for second program year; questions and answers; interim rule; comments by 9–4–80

WATER RESOURCES COUNCIL

48800 7–21–80 / State Water Management Planning; program guidelines; comments by 9–5–80

Deadlines for Comments On Proposed Rules For The Week of September 7 through September 13, 1980

AGRICULTURE DEPARTMENT

Annual and Plant Health Inspection Search

46784 7–11–80 / Gypsy moth and browntail moth; list of hazardous recreational vehicle sites; comments by 9–9–80

52818 8–8–80 / Importation of carcasses of quail of free flying origin; comments by 9–8–80

45888 7–8–80 / Restrictions on importation of horses from Japan; comments by 9–8–80

Food and Nutrition Service—

46809 7–11–80 / Food Stamp and Food distribution programs on Indian reservations; comments by 9–9–80

46036 7–8–80 / 1980 Food Stamp eligibility limits; comments by 9–8–80

Food Safety and Quality Service—

45915 7–8–80 / Chilling poultry parts; comments by 9–8–80

Rural Electrification Administration—

46811 7–11–80 / REA Bulletin 103–2; Use and approval of general funds for additions to plant, revision of existing bulletin; comments by 9–9–80

CIVIL AERONAUTICS BOARD

46812 7–11–80 / Charter Flight limitations; Carrier's obligations in case of interruptions of its service; reply comments by 9–9–80

COMMERCE DEPARTMENT

Economic Development Administration—

46065 7–9–80 / Financial assistance, public works and development facilities program, etc.; technical amendments; comments by 9–8–80

International Trade Administration—

45898 7–8–80 / Licensing procedures for exports of wheat and corn to the U.S.S.R. (October 1, 1980 to September 30, 1981); comments by 9–8–80

National Oceanic and Atmospheric Administration—

47690 7–16–80 / Alaskan Salmon troll fishery; emergency regulations; comments by 9–12–80

Office of the Secretary—

46437 7–10–80 / Nondiscrimination on the basis of age in programs or activities receiving Federal financial assistance; comments by 9–8–80

CONSUMER PRODUCT SAFETY COMMISSION

53056 8–8–80 / Exportation of noncomplying products; Notification requirements and procedures; comments by 9–8–80

EDUCATION DEPARTMENT

54000 8–13–80 / Precollege Teacher Development in Science Program; comments by 9–12–80

ENERGY DEPARTMENT

46742 7–10–80 / Bidding system for coal leasing; comments by 9–10–80

53422 8–11–80 / Residential conservation service program provisions; corrections; comments by 9–10–80

[*See also* 44 FR 64602, Nov. 7, 1979]

Conservation and Solar Energy Office—

54264 8–14–80 / Alcohol fuels, biomass energy and municipal waste energy projects; loan guarantees; comments by 9–12–80

46762 7–10–80 / Energy conservation program for consumer products; test procedures for clothes dryers; comments by 9–8–80

47396 7–14–80 / Test procedures for refrigerators, refrigerator-freezers and freezers; comments by 9–12–80

Federal Energy Regulatory Commission—

54085 8–14–80 / High-cost natural gas produced from wells drilled in deep water; comment period extended to 9–10–80

[*See also* 45 FR 47863, 7–17–80]

47705 7–16–80 / Revision to Annual Report for Electric Utilities, Licensees and Others (Class A and Class B); Form No. 1; comments by 9–8–80

ENVIRONMENTAL PROTECTION AGENCY

46826 7–11–80 / Approval and promulgation of the Missouri State implementation plans; comments by 9–9–80

46097 7–9–80 / Determination of reportable quantities for hazardous substances; comments by 9–8–80

46094 7–9–80 / Designation of hazardous substances with carcinogenic effects on man; comments by 9–8–80

53490 8–12–80 / Proposed schedules and conditions to correct deficiencies in Maryland's nonattainment area plan revision; comments by 9–11–80

46103 7–9–80 / Proposed removal of dichlorodifluoromethane and trichlorofluoromethane from toxic pollutant list; comments by 9–8–80

52835 8–8–80 / State implementation plan revisions for Idaho; comments by 9–8–80

52411 8–7–80 / Water pollution; canned and preserved seafood processing point source category; comments by 9–8–80

FARM CREDIT ADMINISTRATION

45595 7–7–80 / Powers, duties and responsibilities of District Farm Credit Boards; comments by 9–8–80

45917 7–8–80 / Personnel administration; comments by 9–8–80

FEDERAL COMMUNICATIONS COMMISSION

46457 7–10–80 / FM broadcast station in Bemidji, Minn.; channel assignment; reply comments by 9–11–80

46453 7–10–80 / FM broadcast station in Fruita, Colo.; channel assignment; reply comments by 9–11–80

45601 7–7–80 / FM broadcast station in Seneca, Kans.; changes in table of assignments; reply comments by 9–8–80

49625 7–25–80 / FM broadcast stations in Rhinelander, Tomahawk, Washburn, and Wausau, Wis.; proposed changes in table of assignments; comments by 9–11–80

49626 7–25–80 / FM broadcast station in Laurel Hill, N.C.; proposed changes in table of assignments; comments by 9–11–80

46454 7–10–80 / FM broadcast stations in West Tulsa, Sand Springs, and Pawhuska, Okla.; changes in table of assignments; reply comments by 9–11–80

51251 8–1–80 / Regulatory policies concerning resale and shared use of common carrier international communications services; reply comments by 9–12–80

FEDERAL REGISTER, ADMINISTRATIVE COMMITTEE

46328 7–9–80 / Identification of subjects in agency regulations; comments by 9–8–80

[Corrected at 45 FR 49085, 7–23–80]

HEALTH AND HUMAN SERVICES DEPARTMENT

Health Care Financing Administration—

47368 7–14–80 / Conditions of participation for skilled nursing and intermediate care facilities in certain Medicare and Medicaid Programs; comments by 9–12–80

HOUSING AND URBAN DEVELOPMENT DEPARTMENT

Office of the Secretary—

46012 7–8–80 / Debarments, suspensions, temporary denials of participation, and voluntary exclusions; comments by 9–8–80

INTERIOR DEPARTMENT

Fish and Wildlife Service—

52849 8–8–80 / American alligator, special rule revision; comments by 9–8–80

Geological Survey—

53840 8–13–80 / Oil, gas, and sulfur operations in the Outer Continental Shelf; lease royalty requirements; comments by 9–12–80

52408 8–7–80 / Oil and gas and sulphur operations in the Outer Continental Shelf; western Gulf of Mexico; submission of operations plan instead of development and production plan; comments by 9–8–80

Surface Mining Reclamation and Enforcement Office—

45927 7–8–80 / Operations on Federal lands under the permanent program; State-Federal Cooperative Agreements; Wyoming; comments by 9–8–80

53183 8–11–80 / Surface and underground mining performance standards; comments by 9–10–80

INTERSTATE COMMERCE COMMISSION

53190 8–11–80 / Modification of provisions to allow filing of contract rates between freight forwarders and rail and water carriers; comments by 9–10–80

46461 7–10–80 / Railroad consolidation proceedings; traffic protective conditions; comments by 9–8–80

MANAGEMENT AND BUDGET OFFICE

48667 7–21–80 / Waiver of Government Surveillance requirements; Draft Federal acquisition regulation; comments by 9–10–80

NUCLEAR REGULATORY COMMISSION

45916 7–8–80 / Domestic licensing of production and utilization facilities; technical specifications for nuclear power reactor; comments by 9–8–80

40101 6–13–80 / Nuclear power plant accident consideration under National Environmental Policy Act of 1969; comments by 9–11–80

SMALL BUSINESS ADMINISTRATION

53835 8–13–80 / Regulations implementing Section 503 Development Company Program; comments by 9–11–80

TENNESSEE VALLEY AUTHORITY

51614 8–4–80 / Increase in fees for search and duplication of records; comments by 9–8–80

TRANSPORTATION DEPARTMENT

Federal Highway Administration—

40062 6–12–80 / National standards for traffic control devices; Manual or uniform traffic control devices; Railroad-highway projects; comments by 9–10–80

TREASURY DEPARTMENT

Alcohol, Tobacco and Firearms Bureau—

52407 8–7–80 / Electronic fund transfer for certain alcohol and tobacco products' excise tax payments and other provisions; comment period extended to 9–8–80

[*See also* 45 FR 38258 and 38271, June 6, 1980]

Customs Service—

46442 7–10–80 / Fees for processing applications for bonded warehouses and container stations; comments by 9–8–80

Internal Revenue Service—

46444 7–10–80 / FIFO and other ordering rules for investment credit; comments by 9–8–80

[Corrected at 45 FR 50818; 7–31–80]

46082 7–9–80 / Income tax; exclusion of certain disability payments; comments by 9–8–80

49524 7–8–80 / Income tax; withholding of tax with respect to Virgin Islands inhabilitants; comments by 9–8–80

45926 7–8–80 / Periodic report of actuary; comments by 9–8–80

46815 7–11–80 / Reserve for certain guaranteed debt obligations; comments by 9–9–80

WAGE AND PRICE STABILITY COUNCIL

52769 8–8–80 / Anti-inflationary pay and price standards; Questions and answers on procedures; comments by 9–8–80

Next Weeks Meetings

AGRICULTURE DEPARTMENT

Forest Service—

53502 8–12–80 / Coconino National Forest Grazing Advisory Board, Flagstaff, Arizona (open), 9–5–80

52434 8–7–80 / Fishlake National Forest land and resource management plan, Fillmore, Beaver, and Richfield, Utah (open), 9–3–80

ARTS AND HUMANITIES, NATIONAL FOUNDATION

53851 8–13–80 / Design Arts Panel (Design Demonstration), Washington, D.C. (closed), 9–3 and 9–4–80

55299 8–19–80 / Folk Arts Panel, Sante Fe, N.M. (open and closed), 9–5 and 9–6–80

54911 8–18–80 / Humanities Panel, Washington, D.C. (closed), 9–2, 9–3 and 9–5–80

51676 8–4–80 / Humanities Panel, Washington, D.C. (closed), 9–4 and 9–6–80

54912 8–18–80 / Humanities Panel, Washington, D.C. (closed), 9–5–80

51677 8–4–80 / Music Panel (New Music Performance Section), Washington, D.C. (closed), 9–2 through 9–5–80

CIVIL RIGHTS COMMISSION

55502 8–20–80 / Michigan Advisory Committee, Detroit, Mich. (open), 9–4 and 9–5–80

54788 8–18–80 / Washington Advisory Committee, Spokane, Wash. (open), 9–6–80

51630 8–4–80 / West Virginia Advisory Committee, Wheeling, W. Va. (open), 9–4–80

COMMERCE DEPARTMENT

International Trade Administration—

54391 8–15080 / Importers and Retailer' Textile Advisory Committee, Washington, D.C. (open), 9–3–80

54391 8–15–80 / Management-Labor Textile Advisory Committee, Washington, D.C. (open), 9–3–80

54790 8–18–80 / Subcommittee on Export Expansion of the President's Export Council, Washington, D.C. (open), 9–4–80

National Oceanic and Atmospheric Administration—

53194 8–11–80 / Deep seabed mining programmatic environmental impact statement scoping meeting, Washington, D.C. (open), 9–4–80

53505 8–12–80 / Mid-Atlantic Fishery Management Council's Scientific and Statistical Commerce, Essington, Pa. (open), 9–3–80

54391 8–15–80 / Gulf of Mexico Fishery Management Council, Austin, Tex. (open), 9–3 through 9–5–80

53505 8–12–80 / North Pacific Fishery Management Council's Scientific and Statistical Committee, Seattle, Wash. (open), 9–4 and 9–5–80

55797 8–21–80 / Western Pacific Fishery Management Council, Advisory Panel Honolulu, Hawaii (open) 9–5–80

DEFENSE DEPARTMENT

Army Department—

51632 8–4–80 / Institute for Water Resources, Arlington, Va. (open), 9–4–80

Corps of Engineers—

54122 8–14–80 / Draft environmental impact statement for Brazos Island Harbor Channel, Brownsville, Tex. (open) 9–3–80

Office of the Secretary—

51890 8–5–80 / DOD Advisory Group on Electron Devices; Advisory Committee, Arlington, Va. (closed), 9–4–80

49321 7–24–80 / DOD Wage Committee, Washington, D.C. (closed), 9–2–80

ENERGY DEPARTMENT

53198 8–11–80 / Coordinating Subcommittee of the National Petroleum Council's Committee on Refining Flexibility, Washington, D.C. (open), 9–5–80

55804 8–21–80 / International Energy Agency, Industry Advisory Board, Subcommittee A, Ottawa, Canada (open) 9–4 and 9–5–80

Economic Regulation Administration—

54694 8–15–80 / Maximum lawful selling price for unleaded gasoline, Los Angeles, Calif., 9–5–80

ENVIRONMENTAL PROTECTION AGENCY

54094 8–14–80 / Federal Insecticade Fungicide, and Rodenticide Act (FIFRA) Scientific Advisory Panel, Arlington, Va. (open), 9–4 and 9–5–80

50652 7–30–80 / Science Advisory Board, Subcommittee on Airborne Carcinogens, Washington, D.C. (open), 9–4 and 9–5–80

FINE ARTS COMMISSION

54791 8–18–80 / Meeting, Washington, D.C. (partially open), 9–3–80

52257 8–6–80 / Meeting, Washington, D.C. (open), 9–3–80

HEALTH AND HUMAN SERVICES DEPARTMENT

Health Resources Administration—

45374 7–3–80 / Graduate Medical Education National Advisory Committee, Washington, D.C. (open), 9–2 and 9–3–80

51656 8–4–80 / National Council on Health Planning and Development and Subcommittees, Washington, D.C. (open), 9–4 and 9–5–80

National Institutes of Health—

47924 7–17–80 / Diabetes National Advisory Board; Alexandria, Va. (open), 9–5–80

53876 8–13–80 / Large Bowel and Pancreatic Cancer Review Committee (Large Bowel Subcommittee), Houston, Tex (partially open), 9–3 through 9–5–80

INTERIOR DEPARTMENT

Land Management Bureau—

54145 8–14–80 / Lakeview District grazing management plan Lakeview, Oreg. (open) 9–3–80

54146 8–14–80 / Socorro District Advisory Council, Socorro, N. Mex. (open), 9–5–80

JUSTICE DEPARTMENT

Immigration and Naturalization Service—

49199 7–23–80 / Immigration and Naturalization, Federal Advisory Committee, Alexandria, Va. (open), 9–4 and 9–5–80

NATIONAL SCIENCE FOUNDATION

54491 8–15–80 / Information Science and Technology Advisory Committee, Washington, D.C. (partially closed), 9–4 and 9–5–80

54492 8–15–80 / Policy Research and Analysis Advisory Committee, Environment, Energy, and Resources Subcommittee, Washington, D.C. (open), 9–5–80

54493 8–15–80 / Steering Committee Advisory Council, Washington, D.C. (open), 9–3–80

NUCLEAR REGULATORY COMMISSION

55301 8–19–80 / Reactor Safeguards Advisory Committee, Subcommittee on Reactor Fuel, Washington, D.C. (open), 9–3–80

55301 8–19–80 / Reactor Safeguards Advisory Committee, Subcommittee on Safety Philosophy and Criteria, Washington, D.C. (open), 9–3–80

54914 8–18–80 / Reactor Safeguards Advisory Committee, Subcommittee on Structural Engineering, Washington, D.C. (open), 9–2–80

SMALL BUSINESS ADMINISTRATION

53306 8–11–80 / Region IV Advisory Council, Atlanta, Ga. (open), 9–4 and 9–5–80

STATE DEPARTMENT

55316 8–19–80 / Advisory Committee on International Investment, Technology, and Development, Washington, D.C. (open), 9–3–80

51974 8–5–80 / Shipping Coordinating Committee, Committee on Ocean Dumping, Washington, D.C. (open), 9–4–80

TRANSPORTATION DEPARTMENT

Federal Aviation Administration—

54921 8–18–80 / Radio Technical Commission for Aeronautics, Special Committee 139-Airborne Equipment Standards for Microwave Landing System, Washington, D.C. (open), 9–3 through 9–5–80

VETERANS ADMINISTRATION

51039 7–31–80 / Station Committee on Educational Allowances, Nashville, Tenn. (open), 9–5–80

41754 6–20–80 / Wage Committee, Washington, D.C. (closed), 9–4–80

Next Week's Public Hearings

AGRICULTURE DEPARTMENT

Agriculture Marketing Service—

54066 8–14–80 / Milk marketing orders, New England: Framingham, Mass., 9–9–80

CIVIL AERONAUTICS BOARD

51865 8–5–80 / Competitive marketing of air transportation, Washington, D.C., 9–3–80

ENERGY DEPARTMENT

Economic Regulatory Administration—

54662 8–15–80 / Obtaining crude oil for the Strategic Petroleum Reserve by exchange of Naval Petroleum Reserves crude oil and other means, Washington, D.C., 9–4–80

51833 8–5–80 / Reports on Major electric utility system emergencies, Washington, D.C., 9–3–80

Conservation and Solar Energy Office—

54264 8–14–80 / Alcohol fuels, biomass energy and municipal waste energy projects; loan guarantees, Denver, Colo., 9–5–80

46762 7–10–80 / Energy conservation program for consumer products, test procedures for clothes dryers, Washington, D.C., 9–4–80

ENVIRONMENTAL PROTECTION AGENCY

50833 7–31–80 / National interim primary drinking water regulations; variances, Austin, Tex., 9–4–80

MANAGEMENT AND BUDGET OFFICE

Federal Procurement Policy Office—

51016 7–31–80 / Uniform procurement system, Detroit, Mich., 9–3 and 9–4–80

51016 7–31–80 / Uniform procurement system, Houston, Tex., 9–5–80

TRANSPORTATION DEPARTMENT

Coast Guard—

51032 7–31–80 / Alteration of Burlington Northern Railroad Bridge across Willamette River, Portland, Oreg., 9–2–80

TREASURY DEPARTMENT

Internal Revenue Service—

49596 7–25–80 / Qualified group legal services plans, Washington, D.C. 9–4–80

List of Public Laws

Note: No public bills which have become law were received by the Office of the Federal Register for inclusion in today's **List of Public Laws.**

[Last Listing August 14, 1980]

Documents Relating to Federal Grant Programs

This is a list of documents relating to Federal grant programs which were published in the **Federal Register** during the previous week.

RULES GOING INTO EFFECT

54334 8–15–80 / Interior/HCRS—Urban Park and Recreation Recovery Program; amendment to rules published March 10, 1980 (45 FR 15456)

APPLICATIONS DEADLINES

54867 8–18–80 / HHS/HDSO—Special Project Grant Program—Projects of National Significance in Development Disabilities; apply by 9–5–80

55556 8–20–80 / SBA—Availability of FY 1980 funds for continuation of data base development design with specific application to large micro data files; apply by 8–22–80

55249 USDA / FmHA—Rural self-help housing technical assistance self-help rehabilitation/repair assistance grants; apply by 10–3–80

56316 8–22–80 / USDA/FNS—Food Stamp program, Demonstration project, Requirements for participating, State agencies; apply by 10–21–80

MEETINGS

56191 8–22–80 / HHS/ADAMHA—Mental Health Small Grant Review Committee, Washington, D.C. (partially open), 9–18–80

55924 8–21–80 / HHS/NIH—Recombinant DNA Advisory Committee, Bethesda, Md. (partially open), 9–25 and 9–26–80

54911 8–18–80 / NFAH—Humanities Panel, Washington, D.C. (closed), 9–2, 9–3 and 9–5–80

54912 8–18–80 / NFHH—Humanities Panel, Washington, D.C. (closed), 9–5–80

54912 8–18–80 / NFAH—Humanities Panel, Washington, D.C. (closed), 9–8 through 9–10–80

54911 8–18–80 / NFAH—Humanities Panel, Washington, D.C. (closed), 9–8 through 9–13–80

54911 8–18–80 / NFAH—Humanities Panel, Washington, D.C. (closed), 9–15 through 9–19–80

54912 8–18–80 / NFAH—Humanities Panel, Washington, D.C. (closed), 9–15 through 9–19–80

54911 8–18–80 / NFAH—Humanities Panel, Washington, D.C. (closed), 9–22 through 9–24–80

54912 8–18–80 / NFAH—Humanities Panel, Washington, D.C. (closed), 9–22 through 9–25–80

OTHER ITEMS OF INTEREST

56105 8–22–80 / EPA—Assistance for pesticide enforcement and applicator certification program, notification to Secretary of Agriculture of final rule

55924 8–21–80 / HHS/NIH—Recombinant DNA Research; proposed actions under 1980 NIH Guidelines; comments by 9–22–80

55282 8–19–80 / HHS/PHS—First-year student enrollment decreases for health professions schools

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